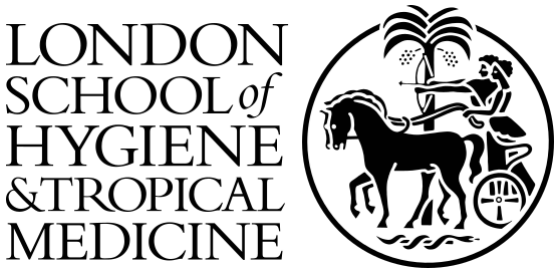

VEGETARIANISM IN THE UK

by

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ABSTRACT

The aim of this research is to develop an understanding of why people become vegetarian and why the diet is currently enjoying a steady increase in popularity in contemporary Britain, through addressing the 'hidden agenda' of vegetarianism. Vegetarianism offers an example of food choice which highlights the non-nutritional aspects of food and eating, and represents far more than a pragmatic aversion to eating meat. The research incorporates both qualitative and quantitative studies. Two data sets were collected from 137 vegetarians in Greater London; qualitative information about the values and attitudes of vegetarians regarding diet, health and related issues, and quantitative information regarding the dietary intake of different categories of vegetarian. The findings of both studies are presented, but the thesis focuses on the qualitative data which was analysed using a symbolic approach to the study of food and eating as developed within anthropology. It was found that the decision to become vegetarian, and attitudes regarding food and health, formed a complex package of ideas which ranged from concrete issues, such as concern about the quality of the food supply, to ethical and abstract concerns, such as the character of the relationships between human society, nature and the animal world. There were differences between types of vegetarian in both diet and attitudes; as the diet became more extreme (excluding more animal foods) so attitudes became progressively more heterodox. It is concluded that vegetarianism does not deserve the label of 'fad' or 'cult' diet, but that it articulates a complex and potentially subversive ideology and demonstrates the need to incorporate social and cultural factors into analyses of food choice.

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CHAPTER 1: INTRODUCTION

1.1 Background to the study

This thesis reports the findings of a study of 137 practising vegetarians in Greater London. The research was commissioned and funded by the Ministry of Agriculture Fisheries and Food (MAFF) out of concern at the lack of information regarding the dietary intake of vegetarians in the UK. The primary interest of MAFF was in the nutrient intake and food use of different types of vegetarians, representing the range of voluntary vegetarian practice in the UK. In addition, MAFF also funded the collection of data on reasons for being vegetarian, and attitudes and beliefs regarding nutrition, health and associated topics with the aim of understanding the motivation behind the current resurgence of interest in vegetarian diets in the UK. Both data sets are presented, but the latter data set forms the bulk of the thesis, which focuses on the problem of the interpretation of human dietary selection. The dietary data is included in order to explore the correlation, or absence of it, between actual food use and reported attitudes and beliefs.

The thesis commences with a discussion of the different ways in which the analysis of dietary selection in humans has been approached and the problem that vegetarianism poses to these. After the particular theoretical approach to be adopted in this thesis has been delineated, the methodologies used and the sample are described in Chapter 2. Chapter 3 discusses the reasons the subjects in this study gave for being vegetarian, how these might have changed, and changes in the type of vegetarian diet followed. In Chapter 4 the knowledge, attitudes and beliefs of subjects regarding diet and health are examined, with particular reference to the perceptions of the relationship between diet and health, the benefits of being vegetarian, and attitudes towards and use of "alternative" medicine. Attitudes and beliefs regarding food and food production are described in Chapter 5, proceeding from general preferences and avoidances (other than animal foods) to a more detailed description of attitudes towards particular foods, such as processed foods and meat. Data describing the pattern of nutrient intake and food use of the vegetarians in this sample are presented in Chapter 6, and comparison is made with omnivores. Since the practice of vegetarianism has a long history in Western Europe, this is reviewed in the conclusion, which also contains a more detailed exploration of the symbolic themes which emerged in the earlier chapters. Food use generally in contemporary Britain and changes in the food system are also described in the Chapter 7. The thesis concludes with a discussion of the implications of this study for the further investigation of food choice and, more specifically, areas which future research could address with regard to vegetarianism, both in relation to the dietary intake of vegetarians and the nutritional adequacy of vegetarian diets and to the social aspects of vegetarianism.

It should be noted that the nature of the research project, that is commissioned and funded by MAFF, influenced some components of the methodologies used, and in particular the use of a 3-day weighed intake method which was specified by MAFF. The title of the thesis reflects the concern of MAFF to gather information on the diversity of vegetarian diets as consumed in the UK and peoples' reasons for following them. As discussed in Chapter 2, care was taken to recruit a sample that reflected this diversity, although it was drawn from one geographical area.

1.2 Vegetarianism and the problem of dietary selection

Why do people eat what they do and what does it mean to them? Human food choice is complex and unpredictable and its analysis is not a simple matter. It can be approached at a number of different levels and within a variety of theoretical frameworks. Social anthropology offers a perspective which incorporates the social and cultural aspects of food and eating and demonstrates that these are central to an understanding of food choice. The aim of this thesis is to take 'vegetarianism' as a specific example of food choice and using one type of anthropological analysis understand the implicit values and attitudes which it expresses and from which its adherents draw value and meaning. Through an analysis of the cultural and symbolic meanings attached to diet and health and the context of contemporary British society in which they are embedded, it will be shown that cultural factors need to be incorporated into models of dietary selection.

Vegetarianism offers a rather unusual and apparently anomalous example of food choice in Western society: it is a decision to deviate from the cultural norm of meat-eating, and reverses expected consumer trends in that a group of predominantly affluent, middle class and well educated people are rejecting a high status, desirable and nutritious food item, which historically has enjoyed a favoured place in the British diet (Drummond and Wilbraham 1958; Wilson 1976), in favour of low-prestige vegetable foods, which are popularly regarded as nutritionally inferior. Vegetarianism has been the target of ridicule and has been generally perceived as rather 'cranky', but it raises serious and fundamental questions about the interpretation and evaluation of human food selection and eating habits: should eating practices be viewed only in the light of biological requirements, or should they be interpreted with reference to the cultural context in which they occur and the social functions which they may serve?

As Gofton (1986) writes, eating, like sex, presents an analytic problem since it is considered to be founded on 'natural need', that is the biological necessity of providing the human organism with energy and other essential nutrients. It is a universal feature of human existence, yet almost infinitely variable in actual practice, varying between and within societies. Food and eating can be seen as simultaneously occupying the spheres of culture and biology. So how

then should eating practices be interpreted? Douglas, a leading worker in developing the social anthropology of food, maintains that for analytical purposes at the least the aesthetic or social aspects of food should be kept distinct from its nutritional aspects (Douglas 1982). According to whether it is approached through biology or anthropology, vegetarianism can be seen either as a nutritional aberration, or as a form of behaviour meaningful both to those who practise it and in the context of contemporary British society.

Within the nutritional and medical sciences there is a growing body of work on specific biomedical aspects of vegetarianism, such as the relationship between fat intake and blood lipids, and there have been large epidemiological studies of the increased or decreased incidence of specific diseases among vegetarians, for instance coronary heart disease and cancer (see for example: Burr and Butland 1988; Burr and Sweetnam 1982; Margetts et al 1986; Ophir et al 1983; Rouse et al 1983; Sanders et al 1978a; Thorogood et al 1990). Within the social sciences, however, vegetarianism has received little attention and there is a dearth of studies, particularly in the UK, enquiring into why people choose to become vegetarian and why the diet is currently enjoying a massive increase in popularity. It was estimated in 1990 that vegetarians constituted 3.7% of the adult population, representing an increase of 76% since 1984 (The Realeat Company Ltd 1990). More recently, a survey commissioned by the Vegetarian Society, carried out by Bradford University, claims that 3.6 million people over the age of 11 years, or 7% of the population now describe themselves as 'vegetarian'. They further state that 30,000 people every week are giving up meat and fish (The Times, 16th May, 1991), although it is not known how many people renounce vegetarianism. Despite the dismissal of these claims by the Meat and Livestock Commission (perhaps somewhat predictably), vegetarianism should be considered as a significant social phenomenon and no longer be characterised as a 'food fad' or 'cult diet' appealing only to a minority of eccentrics.

Before the particular theoretical approach to be adopted in this thesis is described, some of the different approaches to the study of food and eating which have been developed are described and their respective explanatory power with regard to vegetarianism is discussed. It is shown that the various models conceive food and eating as pertaining either to the spheres of biology or culture and that this has implications for the way in which 'food habits' are interpreted and evaluated.

1.3 Medical models of food choice

The term 'medical models' is used loosely here to refer to those models of diet selection which have been elaborated within the nutritional, medical and psychological sciences. A variety of different approaches have been developed which are here grouped into: 1) those that start from the assumption that food selection in human beings is governed by biology and that

humans demonstrate a 'nutritional wisdom' which leads them to choose those foods that are good for them; 2) the 'commonsense' or Knowledge-Attitudes-Practice (KAP) approach which assumes that humans do what they think is good for them, and that practice derives from attitudes which in turn derive from knowledge; and 3) more sophisticated models drawn from social and clinical psychology, which focus on the motivation of the individual and the range of internal and external factors which influence this. In all of these models (1-3) social and cultural factors are either neglected, or incorporated in a rather unsophisticated and static way.

1.3.1 Biological models

The type of models which fall into the first category exhibit a crude form of biological materialism akin to sociobiology in seeking to explain human behaviour by supposedly intrinsic biological attributes and instincts (Lewontin 1980). Food selection is seen as driven by the physiological need to meet certain nutritional requirements. This conception of the meaning and function of food and eating relies upon two further assumptions: firstly that there are innate qualities of foods which are good for us and that make us want to eat them; and secondly, that humans possess some kind of 'nutritional wisdom' or instinct which guides them to make wise food choices. Both of these are questionable.

Yudkin is an example of a nutritionist who has attempted to explain human food choice as determined by physiological need actuated through the mechanisms of palatability and specific satiety (Yudkin 1978). His argument, in brief, runs thus: "The instinct or drive in food choice is that of palatability; an animal instinctively chooses to eat a food because it finds the food palatable, and in doing this it satisfies its nutritional needs" (Yudkin 1978, p251). The mechanism of 'specific satiety' (this refers to the observed effect that the palatability of a specific food falls as more of it is eaten within a single meal) ensures a varied diet is eaten, which provides the range of essential nutrients required by humans. In Yudkin's' view, the palatability of a particular food is a direct reflection of its nutritional content, hence the more nutritious a food, the higher its palatability and the more it is consumed. Animal foods are considered to be inherently superior to, and so more palatable, than vegetable foods and so humans are predisposed to like them; "In general, he [man] seems to basically have a liking for two sorts of food: those that have the texture and savoury taste of meat, and those that have the different texture and sweet taste of fruit. He will eat his meat until he has had enough, but he will still be happy to eat his dessert. This phenomenon I have called specific satiety; and it achieves the biological purpose of increasing the range of nutrients that are taken and so increases the chances that all nutritional needs are met" (Yudkin 1978, p255).

The purpose of food and eating is conceptualised exclusively as the satisfaction of nutritional requirements. Yudkin uses data from rat experiments to support his argument, but he is very

selective in his use of examples of human eating habits (he cites the experiment of Dr Clara Davis in the 1920s which is discussed below). In addition to a certain circularity in his argument, the putative link between palatability and nutritional value is hard to maintain in either an historical or cross-cultural perspective. It also breaks down with regard to what are regarded as dysfunctional eating habits, such as pica (earth-eating), and learned tastes for substances such as coffee and spices which serve no nutritional need.

Yudkin discusses 'health foods' (which he defines as foods grown or produced in a special way such as free-range eggs, and products such as royal jelly and honey) which also do not fit this paradigm and he tries to redeem his argument by saying that 'needs' and 'wants' have become separated in Western society where most of the diet is commercially manufactured. He does not, however, define either of these terms and how they might differ from each other. The concept of 'need', apparently meaning some biological necessity, is taken as given. In this conception of 'needs' and 'wants' and separation of the two in the West, Yudkin falls into what Fischler (1980, p942) has called the 'neo-Rousseauist' position - that 'culture perverts nature' and cultural practices lead astray the wise nutritional instinct of humans to select and consume a balanced diet. This leads Yudkin to dismiss certain eating habits, such as the consumption of 'health foods', as dysfunctional and irrational since in nutritional terms there is virtually no difference between 'health foods' and non-health foods. He fails to recognise that at least part of the attraction of health foods lies in their non-material qualities, that is their perceived rather than innate attributes, and that these are culturally defined. Much of the eating behaviour of humans is 'non-sense' in these narrow terms, and doubtless Yudkin would also consider vegetarianism dysfunctional and irrational; in his paradigm, the choice of lentils over steak is incomprehensible.

The question of whether human beings possess a nutritional instinct is also contentious. Within the biological sciences animal experimentation has demonstrated that rats do appear to have some kind of instinct which allows them to regulate their food intake, but it is not valid to extrapolate to humans on the basis of this work. A study (Davis 1928) in which infants were allowed to select their own food is much quoted as evidence that humans do have a nutritional instinct. Thomas (1988), however, points out that the methodology of the study is very questionable - it included only three children, the 'free' choice was actually quite limited, all the foods offered were 'wholesome', and the influence of the nurses on the children's choices was not taken into account - and the study does not corroborate the claims which it is often used to support. With regard to the latter shortcoming of the study, it has been observed that the food preferences of children are influenced by the likes and dislikes of their caretakers (Escalona 1945). In a review of studies which have tried to demonstrate the role of physiological mechanisms in determining food choice, Thomas (1988) concludes that there is some

evidence that physiological adjustments are made in response to changes in energy intake, but that these are not very accurate and can be overridden. With regard to the notion of an innate instinct or taste in humans, she writes that some aspects of taste and 'hedonic conditioning' may guide food choice to favour food of nutritional quality but only in situations where "food choice is relatively limited and taste is an accurate predictor of the nutrient content of a food" (Thomas 1988, p147). Although there appears to be an innate preference for sweetness and saltiness (Desor et al 1973; Desor et al 1975; Logue 1986), the 'taste' for most foods and flavours is not an a priori given. As will be discussed in section 1.3, the formulation of 'taste' involves ideational and social factors in addition to physiological mechanisms.

The contention that foods are selected on the basis of their nutritional qualities is thus hard to maintain, and it further appears that the role of physiological mechanisms in guiding the food choice of humans is limited. In a paper discussing the physiological control of human food intake (James et al 1980, p4), the authors write: "This 'programming' of food intake is far from precise but normally does relate to the energy needs of the body. It can, as we are well aware, be overridden by environmental pressures and particularly by social and psychological factors. These factors themselves impede a critical assessment of the control of food intake". If the influence of social and psychological factors is acknowledged, then surely they should be included in any truly predictive model of food choice and not merely dismissed as an 'impedance'. Without discounting the possible role of physiological mechanisms in regulating some aspects of food intake and the undeniable fact that food is nutritious, biology alone cannot explain the enormous variability which humans demonstrate in making choices about food and the elaborate practices surrounding its consumption, and it cannot make sense of the current popularity of meatless diets.

1.3.2 KAP models

The KAP model of behaviour, which assumes that 'practice' flows from knowledge and that humans do what they think is good for them, is implicit in most health education. 'Unhealthy' behaviour, such as eating a high fat diet, is attributed to ignorance of the health risks attached to such a diet, and what is needed to correct or alter this behaviour is to provide people with the correct information. Unfortunately, the causative link between nutritional knowledge and subsequent eating behaviour is far from proven. In a review of studies looking at the relationship between knowledge about food and nutrition and food choice, Thomas (1980) found conflicting results; some studies found a positive correlation between nutritional knowledge and what were judged to be better diets, whereas others found that increasing individuals' level of knowledge did not necessarily lead them to alter their diets. Axelson et al (1985) concluded from a meta-analysis of investigations into the relationship between dietary behaviour, nutrition knowledge and food and nutrition related attitudes, that there may be a

lack of correspondence between dietary intake and knowledge or attitudes. In an evaluation of the KAP model of behaviour and the inter-relationships between the different components of the model, Strobl and Groll (1981) found that attitudes were the strongest predictor of behaviour, but that these attitudes were not themselves the direct product of knowledge. Interestingly, personal experience was also associated with practice. They concluded that to alter practice, attitude development must be addressed in addition to cognitive learning.

Despite the lack of evidence to support the KAP model of behaviour it is still implicit in most health education ("One fundamental feature of nutrition education is its emphasis on dietary behaviour change as a result of the educational intervention" McManus 1990, p389). A recent study of the differences in health, knowledge and attitudes between vegetarians and meat-eaters tried to identify the factors which made people adopt the healthier vegetarian diet (Shickle et al 1989). Unfortunately, the investigators begged the question of why people had become vegetarian. Since a vegetarian diet was considered to be healthier in terms of current diet recommendations (DHSS 1984; James 1983), it was assumed that people had become vegetarian because of health concerns and that they perceived their dietary change as healthier. The vegetarian subjects were not asked why they had decided to become vegetarian, but only about their knowledge, attitudes towards, and perceptions of specific health topics, such as alcohol and smoking habits, with a series of agree/disagree statements. The investigators found that vegetarians tended to hold stronger opinions about diet and be more strongly opposed to habits such as smoking and drinking, but that "despite tending to have healthier lifestyles vegetarians did not rate their physical condition for their age significantly higher than the general population" (Shickle et al 1989, p19). This would appear contradictory - if the vegetarians did not actually feel better for their diet, why did they bother to persist with it? The investigators failed to realise that although they may consider vegetarianism a healthy diet, this does not necessarily mean that vegetarians have adopted their diet for health reasons.

Although focusing on knowledge and attitudes as the determinants of food choice rather than physiological attributes, this approach shares a utilitarian or pragmatic concept of the significance of eating with biological models: that is, eating and health behaviour have only one level of meaning and function - the maintenance of the organism in a state of 'health'. This approach also ignores the rich complex of ideas regarding health and food which people already possess and which informs their behaviour, and that this may not be not be congruent with orthodox medical concepts. This has been called the "fallacy of the empty vessels" (Polgar 1962, p165). The notion that people eat for health, or would if they only knew how, is contradicted by Shickle et al (1989) who failed to demonstrate that vegetarians were more knowledgeable about nutrition that their non-vegetarian counterparts.

1.3.3 Psychological models

This term covers a rather heterogeneous group of models which are here grouped together since they share the characteristic of focusing on individuals and their psychological characteristics in terms of attitudes and beliefs. Many of the proposed models draw on structured attitude models developed in social psychology, which attempt to relate food choice and attitudes but in a rather more sophisticated way than the KAP model allows (Shepherd 1990). These schemes incorporate a range of influences operating on the individual which fall into three basic categories - the individual, the food, and the environment in which food choice is made (see for example, Randall and Sanjur 1981) - with the aim of correlating attitudes and beliefs with behaviour. Food choice itself is seen as a form of "intentional behaviour" (Shepherd 1988; Shepherd and Stockley 1985), and, although it is interpreted in terms of personal beliefs and attitudes, dietary selection is evaluated in terms of conformity to 'healthy eating' recommendations.

Many of these studies have found a correlation between nutritional beliefs and attitudes and a particular dietary behaviour, such as use of dietary supplements (Worsley et al 1987), use of salt (Shepherd and Farleigh 1986), and consumption of high fat foods (Shepherd and Stockley 1985). In the latter study, significant correlations were found between attitudes and the frequency of consumption of high fat foods such as meat and meat products, and there were differences between the sub-groups in the study (women, for instance, had more negative attitudes towards the consumption of high fat foods). Interestingly, the pattern of responses for cheese differed to that of the other foods, which all produced similar responses. In attempting to explain the sub-group difference and the different attitudes towards cheese, the authors only make circular statements, such as the responses regarding cheese may be different "because cheese is not viewed in the same sort of way as the other foods" (Shepherd and Stockley 1985, p436). They conclude (in circular fashion again) that attitudes correlate with consumption differences between different sub-groups in the population, which may reflect attitudinal differences.

The questions of why individuals hold these particular beliefs, and the content of these beliefs, are not addressed. Few people are totally idiosyncratic in either beliefs or behaviour. These are usually found to follow some line of social differentiation, such as class, gender or ethnicity, yet how social factors such as these might influence beliefs and behaviour is not explored. The focus on the lone consumer also leads to a neglect of the social context of eating; both food choice and eating are conceptualised as personal acts with personal meanings which occur in some kind of void.

Beliefs regarding food are obviously shared as Rozin, another psychologist, found in a study addressing the psychological bases of food rejection among Americans (Fallon and Rozin 1983). The authors identified four categories of food rejection; distaste, danger, disgust and inappropriateness. It was found that all of these categories, and particular disgust and inappropriateness, had strong ideational bases and many foods rejected as being either disgusting or inappropriate had not even been tasted by subjects. Disgust, for instance, was evoked by the mere idea of eating a specified substance. Although the authors note that the items which are considered disgusting or inappropriate will probably vary from society to society, they do not question why American college students consider cooked monkey meat disgusting when the Chinese rate it a delicacy. There was a high level of consensus among subjects regarding the classification of a list of items into these categories, and this categorisation cannot be explained purely by reference to psychological motives, but is obviously related to some culturally defined classification of food.

Although this type of approach provides a more detailed account of the relationship between attitudes and beliefs and the food choice of an individual, it shares certain shortcomings with the KAP type of models through its focus on the lone consumer eating in some kind of social vacuum. Psychological explanations of food choice tend to be rather tautological, and although they may show that the consumption of certain foods is associated with a particular set of attitudes they cannot explain why individuals have these different attitudes. Also, the content of belief and what food actually means to people in terms not related to nutrition is not addressed.

1.3.4 Concluding remarks regarding these models

In terms of the models of food choice grouped described above, vegetarianism is an illogical and irrational form of behaviour, and, when interpreted within their frameworks, vegetarians are usually relegated to the categories of the deluded or the deviant. There is a significantly large 'food fad' literature in which not only vegetarians, but also those who use 'health foods', are labelled as 'food faddists' or 'food cultists' whose abnormal behaviour is due to ignorance or psychological instability (see for example: Bruch 1970; Jalso et al 1965; Jarvis 1983; New and Priest 1967; Roebuck and Hunter 1972; Rynearson 1974; Schafer and Yetley 1975). There has even been a study in which the psychological health of vegans was compared with a group of severe schizophrenics and a group of 'normal', that is meat-eating, people (West 1972). The initial premise of the study was that the vegans must be a little odd or deranged in some way, and the investigator appeared disappointed to conclude that the vegans were not psychotic but a group of rational and well-balanced individuals. Despite the opinion of an American psychoanalyst that vegetarianism is a defence against oral cannibalist wishes (Friedman 1975), Cooper et al (1985, p527) found that vegetarians were not hysterical or obsessional in any way and showed "minimal deviations from normal controls on psychometric testing".

The shortcomings of the approaches described and their subsequent failure to account for vegetarianism stem from the conception of food and eating as pertaining exclusively to the spheres of biology or individual psychology with cultural factors given only a very minor role. It is perhaps significant that most of these models of food choice have been elaborated within the context of Western society where a particular pattern of food choice and diet is taken for granted and the effect of social factors on dietary selection are submerged. Without dismissing the biological or nutritional aspects of eating, a focus on it as an exclusively biological or personal event is unable to account for the diverse patterns of human eating practices, and more specifically for the phenomenon of vegetarianism in the UK. More intangible social and cultural factors need to be taken into account in the interpretation of human food choice. The different ways in which this can be done are discussed next.

1.4 Social anthropological approaches to the study of food and eating

There have been a number of very different anthropological approaches to the study of food and eating and the mechanism of dietary selection. Murcott (1988) has identified four fundamental premises from which they all proceed: 1) humans are omnivores - they can and do eat a wide range of diets which will satisfy nutritional requirements; 2) humans are highly selective about what they eat and even in times of scarcity do not utilise all the potentially nutritious items available in the environment; 3) different patterns of dietary intake cannot be satisfactorily explained by the dictates of biology alone; and 4) accordingly there must be cultural factors involved in food choice. Anthropological analyses of food choice therefore stress the non-nutritional aspects of food and eating. There are various ways in which these can be studied and cultural factors incorporated into explanations of 'food habits', and a number of different analytical perspectives have been used. Each of these conceptualises the relationship between culture and food in a distinctive way and places a varying emphasis on the material and symbolic aspects of food and the role of food production and consumption in society. The various anthropological approaches towards food and eating which have been developed are described below in a roughly chronological order.

1.4.1 Studies of the non-nutritional aspects of food as related to social factors

Within this rather general category several particular conceptual frameworks have been employed but they are linked by a common concern with relating 'food ways' or 'food habits ', as they have been called (see for instance: de Garine 1972; McElroy and Townsend 1989; Murcott 1982; Ritenbaugh 1978), to the wider social environment. In the 1930s British social anthropologists in the structural-functionalist school of anthropology produced some of the earliest studies of the inter-relationships between social organisation, food supply and nutrition. Audrey Richards in particular focused on food and she wrote two classic works, Hunger and Work in a Savage Tribe (Richards 1932) and Land, Labour and Diet in Northern

Rhodesia (Richards 1939), in which she demonstrated the central role of food production and distribution in social structure. Richards also showed how people could become trapped in a vicious cycle of under-production and undernutrition, a situation partly created in Rhodesia by the siphoning-off of male labour to the British-owned mines.

Most of this work was done in the political context of colonialism and was influenced by the economic and political needs of the British empire (Manderson 1986). Richards showed that under-productivity (a concern of British mining and other economic interests) was linked to undernutrition, not sloth. She initiated the concept of a 'nutrition system' which encompasses the social relations of production, distribution and exchange of food as well as cultural attitudes and symbolic qualities attached to food. Her approach was also inter-disciplinary (she employed botanists, nutritionists and biochemists in evaluating the nutritional values of foods) and incorporated the effects of social change on the nutrition system. This is particularly relevant today with the shift from subsistence agriculture to cash cropping and rural-urban migration which usually results in a negative nutritional impact.

This type of approach stresses the social function of food and eating and their role in maintaining the social order. The symbolism attached to food is thus taken as an indicator of social relations. Goody (1982) complains of a certain circularity and lack of an historical dimension in functionalist explanations, although he approves of the inclusion of the processes of production as well as consumption in the frame of analysis. Despite these shortcomings, it is recognised that food and eating do more than fill stomachs, that it can serve many other functions such as confirming one's membership of a particular group (for instance an ethnic or religious group), maintaining a particular social identity, expressing friendship or hostility, and so forth. O'Laughlin (1974) for instance, found rules of household food allocation to articulate and maintain status and gender divisions with the household.

Food and eating are firmly located within a particular social context, in terms of which they are interpreted. This approach while yielding many insights into the social functions that certain food practices might serve, does not however aid understanding of individual food preferences and the question of what food may mean to an individual.

1.4.2 Ecological and materialist studies

The ecological perspective, which became influential in anthropology from the 1940s, is concerned with understanding the environmental and nutritional determinants of diet and the consequences of particular eating practices in material terms. Ecological theory propounds a 'systems' approach and the concepts of change and adaptation are central: cultures are seen as systems which have evolved to meet and cope with a particular physical environment.

Change is not seen as random but as a response, or adaptation, to a change in the environment; there may be limits to successful adaptation, and some changes may prove dysfunctional or damaging to the system in the long term.

Within these studies 'culture', which is taken to include dietary practices and cultural attitudes toward food, is interpreted as being shaped by environmental conditions and needs, and as serving to maintain the material base of society. Food is conceptualised as a vehicle for nutrients, a scarce resource, an economic commodity, a conduit for energy flow in an ecological system, and as instrumental in achieving some end. The emphasis is on different systems of food production and distribution that have been studied within varying ecological frameworks and which accord different weight to various material factors (for example, environmental, economic, biological and political). This type of approach allows an understanding of how a particular food system, such as that of hunter-gatherers or pastoralists, functions and how they adapt to change and scarcity (de Garine and Harrison 1988; Jerome et al 1980; McElroy and Townsend 1989; Rappaport 1969). The level of analysis is the society or household and tends to exclude individual food use.

The most extreme version of ecological interpretations of food habits is the cultural materialism of Marvin Harris. He interprets all food practices and taboos as having a material function rather than a social function, and this explains both the origin of such customs and their continuance. Hence he attributes the Jewish taboo on the consumption of pork to the inability of pigs to sweat and eat grass, which therefore made them ecologically unsuited to the climate of the Middle East (1986). His explanation for this and other selected food avoidances around the world may sound superficially convincing, but such an argument fails to explain the other dietary proscriptions outlined in Leviticus, such as the prohibition on consuming locusts and sharks. It also fails to explain the feelings of horror and disgust evoked by the suggested transgression of a food taboo.

The undiluted pragmatism of Harris's approach, as Murcott (1988) notes, comes close to asserting that people demonstrate an 'optimal foraging strategy' like animals, or possess some kind of nutritional instinct. This, and his treatment of eating as primarily the satisfaction of biological needs, Harris shares with the biological models of food choice described earlier. He considers that humans possess a 'meat hunger', although he cautiously states that he does not think that humans are genetically programmed to seek out and consume large quantities of meat unlike other carnivores such as lions. Rather, our "species-given physiology and digestive systems predispose us to learn to prefer animal foods" (Harris 1986, p31). This is compounded by the "exceptionally nutritious" qualities of meat, which Harris expounds at length. Humans are thus 'predisposed' to like and eat meat, and it makes 'sense' in Harris's

narrow materialist terms. He gives vegetarians very short shrift; he considers the very term misleading since, in his eyes, 'true vegetarians' only constitute a "tiny minority of cultists, monks, and mystics" who "supposedly prefer plant foods over animal foods" (Harris 1986, p22). He concludes, "such practices are not only unpopular but they don't last long" (Harris 1986, p23)! His somewhat aggressive anti-vegetarian sentiments and dietary chauvinism are belied by the present popularity of vegetarianism among 'normal' people, which is hard to explicate in terms of an underlying material utility.

Goody is another anthropologist who has studied food and eating within a more materialist framework (Goody 1982). Goody is interested in the development of 'cuisines', a term which he uses in three different ways to refer to "in a general sense to the products of the kitchen, more specifically... for a culturally differentiated cuisine... and finally in the specialised sense of those highly elaborated forms of cooking found only in a few societies such as China, the Middle East and post-Renaissance France" (Goody 1982, p.vii). Goody's aim is to explain why some societies have developed a highly differentiated 'cuisine' and how this is related to forms of social hierarchy and the distribution of power. He considers that there is not a simple one-to-one relationship between the two, and in studying 'cuisines' he is insistent that cooking should be seen both in relation to all the phases of food production and preparation, and to other productive and reproductive processes. Goody also stresses the importance of the historical dimension to explain the development of 'cuisines' and of the comparative approach. Goody offers a substantive account of the relationship between the development of different ways of cooking and social organisation, but since the focus of his work and theoretical framework is one of collective 'cuisines' it does not offer much insight into food use by individuals.

1.4.3 Conceptual and symbolic studies

Rather than taking the edibility or palatability of a particular food as a 'given' defined by that food's innate physical qualities, this approach proceeds from the contrasting premise that the concept of the edible is historically and culturally contingent, and that the classification of food versus non-food may bear no relation to empirical nutritional qualities. These studies focus on the question of the concept of the 'edible' and the meanings and symbolic qualities attributed to food and what these may communicate about other levels of reality.

The notion of what constitutes 'food', or that which is considered appropriate for consumption, varies widely cross-culturally. For instance, with regard to the edibility of animal species, dogs are cherished pets in the West, abhorred in much of the Near East as "symbols of all that is filthy and degraded", and consumed with relish in the Far East (Serpell 1986, p.v). The average British person would feel revolted at the suggestion of eating a dog or cat, but yet happily eats

cows, pigs and sheep which are little different in nutritional terms. Several anthropologists have studied the conceptual classification of animals and its relationship to edibility and the social order (see for example: Leach 1964; Lévi-Strauss 1963a; Tambiah 1969). The concept of what constitutes 'food' is not a universal given, but is socially defined and culturally variable.

Within the category of the 'edible' there are usually further subdivisions into food appropriate for certain categories of people, such as women or different social classes, and into the foods appropriate for different meals and different social occasions. In the UK, as Douglas has shown (1982), meals are strictly ordered into breakfast, lunch and evening meal during the day, and beyond that there is a wider patterning or structuring of foods into the weekly round of meals, and beyond that the yearly round with its seasons and festivals.

The definition and classification of different types of foods is not a random affair and may be part of a wider cosmology. Helman (1985) has identified five basic types of food classification; 'food' versus 'non-food' the most basic classification, 'sacred' versus 'profane' food, parallel food classifications such as hot/cold classifications, food used as medicine and medicine as food, and social foods which signify social status, gender identity, friendship and so forth. Several of these classifications may co-exist within a particular context, and the qualities and attributes with which foods are imbued extend beyond the physical. The perceived worthiness of a particular dietary item may be determined by abstract or symbolic qualities, such as the 'hot'/'cold' classification of foods which is used in many countries in Southeast Asia and Latin America. This classification is not a description of foods according to physical temperature or their heating or cooling properties, but relates to abstract properties and gives coherence to an underlying system of values and world view (Laderman 1981). Moral values are often projected on to food; within the context of the British food classification, greens are 'good' for us but chocolate and cream are 'naughty but nice'. Foods also have different social values in terms of desirability and status; in the UK, oysters and caviar are high prestige items whereas bread-and-dripping carries working class connotations and low desirability. Food may thus carry many levels of meaning, which may range from the literal to the abstract.

Structuralism is a theoretical approach very popular in the 1970s which addresses these conceptual and cognitive aspects of food. It was developed and pioneered by the French anthropologist Lévi-Strauss in the 1960s and 1970s. He is essentially concerned with the structure of human thought whose 'deep structures' he views as homologous with societal structures, and he interpreted different patterns of eating as a 'gustatory code' - a concrete medium which expresses abstract principles based on binary oppositions. The most fundamental of these is the contrast between 'Nature' and 'Culture', and Lévi-Strauss considers that as humans we face a paradox in that we are simultaneously part of nature and part of

culture. Cooking, in his view, is one of the means by which humans symbolically distinguish human society from the realm of nature and the origin of cooking thus marks the emergence of humanity. Lévi-Strauss' analysis is much influenced by structural linguistics, and drawing on this he developed the 'culinary triangle' which describes different methods of food preparation, such as roasting, boiling and smoking, in terms of a series of oppositions between 'natural' and 'cultural' transformations of food, cooking and rotting, and elaborated and non-elaborated codes (Lévi-Strauss 1963b). As Murcott (1988, p8) writes, "By this stage, some academics' credulity has been stretched too far", but despite criticisms of his rather selective use of ethnographic data and obsession with binary oppositions, the work of Lévi-Strauss is important and demonstrates how food can be used as a conceptual tool and that rules of food use are related to a society's whole culture and world view. As he puts it, food can not only be good to eat but good to think with too (Lévi-Strauss 1963a).

Douglas can also be called a structuralist but she is rooted in the British empirical tradition. She is thus less concerned with reducing all phenomena to a series of conceptual oppositions, but is more interested in how food is used as a system of communication to convey information about the social order and concepts about the body; "Food is both a social matter and part of the provision for care of the body" (1982, p86). In her analysis of rules of food use and food classification she interprets them as a medium of communication that is both expressive and instrumental; they simultaneously articulate a particular set of social relationships and help to maintain them. She shares with Lévi-Strauss a concern to understand rules of food classification and use as a symbolic order which conveys information, but Douglas rejects binary analysis and draws on the functionalist approach in relating this symbolic order to the social order which it articulates - "The pre-coded message of the food categories is the boundary system of a series of social events" (Douglas 1975, p259). Goody (1982) accuses her of putting the cart before the horse and endowing the social or cultural order with too much autonomy, but Douglas' approach does yield insight into the way day to day food use is structured, and how beliefs about food are also related to concepts concerning the physical body.

The structural approach thus incorporates and interprets the non-nutritional aspects of food, whose meaning is seen to reside in their capacity to communicate or convey meaning about other levels of reality, such as social organisation, gender relationships, the relationship between human society and the natural and/or supernatural world, and which can articulate religious and moral values. The relevance of this approach is in giving valuable insights into the food classifications and attitudes in a particular culture, and in demonstrating that food ideologies are not the product of irrational prejudices but are an integral and rational part of a particular society's culture which may serve various non-material ends and reflect that culture's social, moral and religious values.

1.5 Theoretical approach of this study

As stated in section 1.2, according to the latest survey of vegetarianism in the UK, 7% of the population are now vegetarian (The Times, 16th May, 1991). Gallup market research polls have monitored a huge growth in vegetarianism in the 1980s; their estimate of 3.7% of the adult population in UK as vegetarian or vegan in 1990 represents an increase of 23% since 1988 or 76% since 1984 when vegetarians constituted 2.1% of adults. If viewed in a wider perspective, this increase becomes all the more dramatic, as during the second world war only 120,000 people applied for vegetarian ration cards (Erhard 1973). The numbers are even larger if people who avoid red meat are included; the combined group represents 10% of the population or 5.6 million (The Realeat Company Limited 1990). Red meat consumption has been declining in the UK since the 1960s and cannot be explained in economic or materialist terms. As Burnett (1989, p307) writes: "It may be that there are also more deep-seated reasons - that a society whose occupations are less laborious feels less need for animal protein, or even that the growing preference for 'white meats' (poultry, pork, cheese [sic]) rather than 'red' involves complex physiological and psychological factors".

A number of different ways in which dietary selection can be studied have been described above, and they can be categorised according to: 1) the weight which they accord to either material or cultural factors in determining food choice; 2) how the function and meaning of eating is conceptualised, that is whether it is seen as a biological or cultural event; and 3) the level of analysis, since the medical models tend to focus on the individual person or organism and her/his attributes, whereas the anthropological models tend to focus on social groups, whether a whole society or smaller social groupings such as the household. Despite these differences, the various models described are not mutually exclusive and the materialist approaches developed within anthropology share with the biological models a concern to demonstrate some underlying rationality in terms of a practical or physiological gain. Sahlins (1976) has called this a utilitarian account of human action, which he considers inadequate partly because concepts such as utility and pragmatism are themselves culturally manufactured. Although, as Douglas writes, "It is more convenient for us to take a veterinary surgeon's view of food as animal feed, to think of it as mere bodily input, than to recognise its great symbolic force" (1982, p123), an exclusive focus on the materialist or utilitarian aspects of food and eating has a limited ability to account for the diversity of human eating behaviour and food choice and, more specifically, vegetarianism in the UK.

Grivetti and Pangborn (1973) have pointed out that no single approach to the study of food and eating is satisfactory, but, since a multidisciplinary approach is usually unfeasible, the framework most appropriate to the particular situation should be chosen. Since materialist frameworks, whether biological or ecological, are unable to explain why vegetarian diets have

recently become so popular in the UK, in this thesis a more cultural and symbolic approach to the study of food and eating as developed by Douglas is chosen as the most appropriate. The "great symbolic force" of food is explored and rules of food use are treated as social constructs which form a system that "provides a communicative resource, a language, which both expresses the main themes and values of the society and enables individuals to pursue their individual projects and purposes. Every occasion of usage is, then, both a re-affirmation of a world view and a subtle modification of its shape as the individual interprets and restates it" (Gofton 1986, p131).

Vegetarianism, however, is a deviation from the cultural norm of meat-eating in the UK and represents a decision to stop eating meat that is, despite the many millions of vegetarians now in the UK, for many people an individual and personal decision. An approach is therefore needed which can also address individual food choice and use and relate this to the social context in which it occurs. To this end, the approach to the interpretation of consumption developed by Douglas and Isherwood (1980) in The World of Goods is used to examine vegetarian food choice and the themes and values that lie behind it. In this book Douglas and Isherwood describe the failure of the 'utility' theory of consumption to account for the diversity of consumer behaviour. Rather like Sahlins' (1976) critique of the adequacy of practical or instrumental reason, they assert that a full explanation of why people consume the goods that they do, and what those goods mean to them, has to be grounded in social process. Consumption itself should not be treated, as it usually is in economic theory, as the product of some objective economic rationality, but "as an integral part of the same social system that accounts for the drive to work, itself part of the social need to relate to other people, and to have mediating materials for relating to them" (Douglas and Isherwood 1980, p4). Similarly, "the idea of the rational individual is an impossible abstraction from social life" (Douglas and Isherwood 1980, p5).

Consonant with Douglas' other work, Douglas and Isherwood propose an anthropology of consumption which addresses the use of goods to "make visible statements about the hierarchy of values to which their chooser subscribes" and to "constitute an intelligible universe" (Douglas and Isherwood 1980, p5). They interpret 'goods', which are taken in a broad sense to refer to all material goods including food, as messages which convey information about the abstract concepts and values to which their user subscribes, as markers of cultural categories, and as a means of establishing relationships in addition to being a source of physical satisfaction. The treatment of food consumption as akin to the consumption of other material goods in this way sidesteps the dilemma Yudkin (1978) fell into by partitioning 'needs', which he used to refer 'real' biological requirements, and 'wants' that apparently describe the unnecessary and ephemeral desires created by consumer society, in

that the two are not separated. Douglas and Isherwood describe this division as another false abstraction and a form of "biological Manicheeism" (Douglas and Isherwood 1980, p17). Their approach to consumption, including food consumption, allows an understanding of different patterns of consumption and of the values which inform them, and is particularly appropriate to the interpretation of food choice in contemporary Britain where consumers are now faced with an enormous choice of different kinds of food.

Following this approach, it hoped in this thesis to understand what vegetarianism means to those that adhere to it, what are the values and attitudes which inform vegetarians, and why it has become so popular in the last decade. To achieve this end, areas to be investigated were identified as:

- the pattern of decision-making through which individuals come to vegetarianism
- attitudes towards health and how the relationship between diet and health is perceived by vegetarians
- the symbolic values attached to food, and in particular animal versus vegetable food, and attitudes towards different methods of food production
- the pattern of nutrient intake and food use of vegetarians, how it might vary among vegetarians, and how it compares to omnivores
- whether 'vegetarians' constitute an homogeneous group of people with regard to attitudes, beliefs and nutrient intake and food use, and hence is it possible to identify a unifying vegetarian ideology and identity. Or are vegetarians idiosyncratic in their reasons for being vegetarian and in their food use and nutrient intake
- how does vegetarianism fit into the social context of contemporary Britain.

It should be noted that this study has focused on the question of individual food choice with regard to vegetarianism, and that other aspects, such as the social organisation of vegetarianism, have not been addressed.

CHAPTER 2: METHODOLOGY, STUDY DESIGN AND DESCRIPTION OF SAMPLE

2.1 Introduction and rationale for choice of methods

As stated at the end of Chapter 1, this study contains two contrasting objectives: 1) to collect information on the values and attitudes of vegetarians which will permit an understanding of what vegetarianism means to those who practise it, and why it is becoming increasingly popular; and 2) to collect information on vegetarian diets for an analysis of nutrient intake and food use patterns. These objectives differ in the type of information required to meet them. The first is concerned with the interpretation of social behaviour, the second is concerned with the measurement of a precise variable, dietary intake. To meet both of these objectives qualitative and quantitative methods of data collection were chosen.

The quantitative measurement of precise variables is the conventional methodology of Western science. It falls within the positivist tradition with its emphasis upon the observation and measurement of empirical data. This type of enquiry has been opposed to what can be called the qualitative approach, which tends to be typical of anthropology, although some schools of anthropology and sociology fall within the positivist tradition. These two general approaches vary in a number of ways: they rest upon different epistemological foundations (Von Wright 1978); the actual data of qualitative research differ in that they are not a set of measurements on pre-defined and controllable variables, but are often not defined until fieldwork actually commences and are " 'thick' with meanings; they distil into form a plethora of values, ideas, and experiences" (Peacock 1986, p71). The positivist approach, particularly as used in science, is concerned with the testing of theoretical hypotheses and propositions with the ultimate aim of causal explanation and prediction of empirical phenomenona, whereas qualitative research is more concerned with the interpretation of social phenomena in terms of categories of human behaviour and experience meaningful to those who practise or feel them, and is more inductive in that it tends to proceed from the data to interpretation rather than vice versa (Peacock 1986).

Although the two approaches differ fundamentally in terms of philosophical premise and theoretical objective, they are not necessarily exclusive and can be used to complement each other (Bulmer 1983). In this study both were used; a qualitative technique to gather information on subjects' motivation, attitudes and beliefs regarding food and health, and a dietary survey to provide quantitative data on the nutrient intake and food use of vegetarians. These are described more fully below.

2.2 Qualitative methods of data collection

Participant observation is the classic anthropological technique of collecting data by actually living with, and participating in the daily life of, the people that are being studied. It can allow an in-depth understanding of the whole pattern and way of life of a particular group of people and their culture, but it is very time consuming and the number of people that can be thus studied is small. Other less demanding methods of qualitative data collection which can allow a larger and more representative sample are various types of interview - either formal or informal, structured or unstructured, with a chosen key informant or with unselected individuals, with single informants or structured discussions with groups of people. Since it was hoped to gather information on a number of specific topics from each individual who participated in the study, an interview based on a structured interview schedule was chosen as the most appropriate method, which would allow quantification and comparison of responses. Also, since two fieldworkers were involved in data collection, it was felt that the use of a structured interview schedule would increase reliability since lack of reliability is one of the criticisms often made of participant observation (Pelto and Pelto 1978). The reliability of a method refers to the capability of a method, if used by another person or the same person at another time, to produce the same results (Bulmer 1983).

The interview schedule was designed to cover the three areas outlined in Chapter 1:

- the pattern of decision making through which individuals came to adopt a vegetarian diet-subjects' attitudes towards, and concepts of, diet and health, and how the inter-relationship between the two was perceived, and
- the symbolic values and meanings attached to food, especially animal and plant foods, and attitudes regarding different methods of food production.

These abstract topics were each operationalised into a number of discrete and concrete questions. The rather clumsy term 'operationalisation' refers to the process by which high-level or abstract concepts, such as 'health' or 'class', are turned into low-level and measurable indicators or concepts, which can then be measured or formulated into questions that people can understand and answer (Pelto and Pelto 1978). For example, 'perceptions of health' was broken down into a series of questions such as 'What does it mean to you to be in good health?', 'Do you consider that diet is important (in maintaining good health) ?', 'Would you describe yourself as a generally healthy person?' and so forth. (See Appendix 1 for a copy of the interview schedule.) This was done for each area of interest. Questions regarding the pattern of decision-making were designed to distinguish between current reasons for being vegetarian, and original reasons for adopting a vegetarian type. Changes in the type of vegetarian diet followed were also recorded. In the questions relating to food, it was hoped to explore some of the meanings and values attributed to different kinds of food and also to lay

categories such as 'natural' and 'pure'. The interest in these particular categories arose from an MSc project in which the investigator carried out a small survey to inquire into peoples' reasons for using health foods (Draper 1986). From this it emerged that health foods were seen primarily as 'natural' and 'pure' foods and that this was the main source of their appeal. Since it had been found in this study that it is very difficult to ask people to define an abstract term such as 'natural', subjects were asked to provide an example of a 'natural' food and then to explain why they had chosen that specific item. By asking people to give a concrete example of what they considered to be 'natural', it was then easier for them to say why they thought that particular food was 'natural' and not another.

In formulating the interview schedule as many open-ended questions as possible were included. Unlike closed questions, in which the subject chooses their answer from a check-list of pre-coded responses, an open-ended question allows the respondent to answer whatever they wish and at whatever length they desire. The closed question format assumes that the range of possible answers to a particular question is known in advance and the appropriate categories can therefore be provided. In this study, the purpose of the interview was to gather information on hitherto unknown topics, such as peoples' reasons for being vegetarian. Although the interview schedule restricts what topics are discussed, open-ended questions allow for unanticipated findings to occur and let the sphere of enquiry remain open during data collection. The open-ended format also permits more opportunity for self-expression by the subject, and is considered more appropriate for questions which seek to enquire into the personal views and attitudes of the respondent (Bailey 1978).

The open-ended format was used for all questions relating to attitudes and concepts, and often in conjunction with a contingency question to prevent the asking of irrelevant questions. For instance, a subject was only asked in what way their health had improved since she/he became vegetarian if they felt that it had. Since open-ended questions tend to require prompts (Bailey 1978), care was taken to establish a uniform system of prompts used by both the investigator and the other fieldworker (see section 2.9).

The wording of questions was kept as simple and as conversational as possible and technical language avoided, for instance in the questions relating to health and food production. It is not always possible to anticipate how questions will be understood by respondents, and a pilot study (described below) was conducted to identify and rectify any unforeseen ambiguities or misunderstandings in the wording of questions. Changes made to the interview schedule are described in section 2.4.

When the interviews were conducted, an effort was made to establish rapport, which sometimes necessitated the consumption of unusual comestibles, such as puréed raw spring greens. It was stressed that the questions were not a test of knowledge, but that it was the subject's own views that were of interest. As well as qualitative data on attitudes, information was also gathered on age, sex, social class, education and household structure.

2.3 Quantitative methods of data collection

Dietary surveys which attempt to measure the dietary intake of groups of individuals fall within the quantitative approach. Various techniques have been developed to collect information on the dietary intake of free living individuals, such as dietary recall methods, various types of weighed intake methods, and food frequency questionnaires. These various methods of collecting dietary intake information vary in the reliability and validity of the data thereby produced (Marr 1971), and the choice of a particular method is usually determined by the type of consumption data required (Pekkarinen 1970). The acceptability of a particular method to subjects must also be considered. Dietary surveys are afflicted by the observer effect - the actual act of measurement influences what is being measured - and the more rigorous a particular method is, the more intrusive and demanding it is upon an individual. If the method of assessment chosen is very burdensome, it will affect a subject's compliance and hence the precision of the data collected and, as Ferro-Luzzi notes, the "degree of precision of a survey is in inverse proportion to its acceptability" (Ferro-Luzzi 1982, p122).

The aim of this part of the study was:

- the accurate estimation of current intakes of energy and nutrients of the whole vegetarian sample and each sub-sample (see section 2.6)
- the determination of food use patterns to allow identification of groups with high/low usage of certain food items, and
- an investigation of the effect of seasonality on the diet of vegetarians.

To achieve these, a 3-day weighed inventory method and a food frequency interview were selected by MAFF. It is accepted that a 3-day record can yield valid information about the grouped intakes of individuals (Bingham 1987). Marr (1971) calls the precise weighing technique, in which all ingredients are weighed before and after cooking, the 'gold standard' in terms of the validity of the measurement. This method is very demanding on the subject, however, and it was decided to use the weighed inventory method instead in which foods are weighed prior to consumption, since it was hoped that there would be less modification of subjects' customary eating habits. As Marr (1971, p125) writes "Any loss of validity can then be set against the increased usefulness of data derived from samples of the population living their normal lives for whom the precise weighing technique is not a practical method".

However, since the diet of vegetarians contains many dishes, such as nut loaves and bean stews, that are not included in the MAFF food database and which tend to be made using a number of different recipes, subjects were asked to record the quantity and type of each ingredient and method of preparation used for these home-made composite dishes in addition to portion size. This information made it possible to calculate the nutrient content of the individual dishes from the quantities of each ingredient used.

All subjects were given a booklet in which to record their diet for 3 days and a set of electronic digital readout scales (Soehnle battery operated, 1kg x 1g) which are more accurate than spring balances and also easy to use. Detailed instructions were given to the subjects about how to record the weight of all food and drink consumed over 3 days. The food diaries also contained explicit instructions and an example of how to record intake. (See Appendix 2 for a copy of the food weighing book.) The 3 days chosen were to be 'typical' days, consecutive if possible, and to include one weekend day since most peoples' eating patterns vary over the weekend. If something happened, however, which disrupted usual eating patterns (such as a sudden calamity, a spur of the moment invitation to a party, or illness) subjects were asked to record another day. Particulars about each food item were asked for including type (for instance, type of bread, legume, nut or oil), brand (this referred to proprietary products such as yogurt, peanut butter, or soya milk), and method of cooking (that is, boiling, frying, baking and so forth).

When eating outside the home, subjects were encouraged to weigh their food if possible, but, if they were unwilling or it was inconvenient to do so, they were asked to record quantities in household measures, such as tablespoonfuls or cups. Packaging of snack foods was also collected since this carries portion size information. Those subjects who were unwilling to weigh any of their food kept a food diary with all amounts in household measures (see Appendix 3). All estimated measures were converted into weight using a portion code book produced by MAFF (Crawley 1988).

On completion of the weighed intake a food frequency interview was administered to all subjects in which they were asked the frequency of consumption and average portion size of a list of specified food items (see Appendix 4). Food frequency interviews and questionnaires (self-administered) enquire into the frequency of consumption of various food items over an extended period of time rather than just within the time period of a weighed intake, which is usually relatively brief. Food frequency interviews thus provide useful information about habitual eating patterns and can be used to identify groups of people with a high/low use of selected foods, and whether short-term studies reflect usual eating patterns (Abramsom et al 1963). Some investigators have used food frequency data to calculate nutrient intake (see for

instance, Randall et al 1990), but in this study the food frequency interview was designed to give information about the diversity and regularity of use of fruits and vegetables, the supposed staples of a vegetarian diet - pulses, nuts and grains, proprietary vegetarian foods such as 'nuttolene' and textured vegetable protein (TVP), and, for those who ate them, eggs and dairy products. It was hoped that this information would show if there are identifiable patterns of food use among vegetarians, if there is a reliance upon certain food groups, and how the food use of vegetarians compares with that of omnivores.

Subjects were asked the frequency of consumption of 43 food items in all, some of which were general categories such as pulses, nuts or hard cheese. For these, subjects were asked the overall frequency of consumption and then the number and types of different varieties used. As noted above, subjects were asked average portion size, although this proved to be difficult for some subjects to estimate. Because little is known about the iodine intake of vegans, a short supplementary interview was given to the vegans enquiring about their consumption of iodine-rich foods, such as seaweed (see Appendix 5). Modifications were made to both the format and content of the food frequency interview which are described below.

A sub-sample randomly chosen from each group (see section 2.6) was selected for a 6 month follow-up of both the weighed intake and food frequency interview. The aim of this was to assess the effect of seasonality on diet.

2.4 Pilot study

All 3 components of data collection (the social interview, weighed intake and food frequency interview) were pre-tested on a small sample of 5 vegetarians. The results of the pilot study were used to modify all 3 and remove any unforeseen ambiguities or misunderstandings.

The main section of the social interview requiring modification related to questions regarding motives and how the vegetarian diet was adopted. Most of the subjects had more than one reason for becoming vegetarian, so the format of the question was changed to allow for multiple responses. Originally no differentiation had been made between past and present reasons for being vegetarian and no allowance made for subjects changing the type of vegetarian diet followed. As it was found that the motivation and vegetarian diet of some of the subjects in the pilot study had changed, questions were added asking about changes in motivation, changes in diet, how long the decision to become vegetarian took, and how the diet was adopted in terms of length of time taken and how meat was dropped from the diet. Some questions which had been closed were changed to an open-ended format. For instance, regarding the use of alternative medicines 'Does it work better? - yes/no' was changed to 'Why do you prefer it/them to conventional medicines?' which elicited more information and

also made no assumption about the nature of peoples' reasons for using alternative medicine. Some questions relating to the effect of food processing on the vitamin content of food, and to the fibre content of various foods were dropped since they did not reveal any useful information.

The format of the food diaries was found to be satisfactory, but a modification to the weighed inventory method, in which subjects recorded ingredients of home-made composite dishes was adopted since subjects were found to be eating foods not contained in the MAFF food database.

The food frequency interview schedule required most modification since it was found to be to unwieldy and overlong in its original version. In the pilot study subjects had been asked to specify the frequency and portion size of each food specified, including each variety of legume, nut, cereal grain, lettuce, and so forth. This proved unfeasible since subjects found it very difficult to estimate the individual frequency of each type, and it also made the interview extremely tedious for the subject. Therefore, these questions were replaced with a single question about the consumption of the general food category, and then an open-ended question about the number of different varieties used. This was done for 9 items; pulses, soya products, nuts, nut products, lettuce, starchy vegetables other than potatoes, whole cereal grains other than rice, hard cheese, and soft cheese. This both simplified and shortened the food frequency interview. The 5 subjects who participated in the pilot study did not take part in the main study.

2.5 Study area

Greater London was chosen as the area of study. This was partly for logistical reasons, but also because it was assumed that London contains a larger and more heterogeneous population of vegetarians than elsewhere due to the greater tolerance of non-conformity in the metropolis. Market research polls have also indicated that the greatest growth of vegetarianism is in the south of England (The Realeat Company Limited 1990). This, it was hoped, would facilitate recruitment and permit a larger and more varied group of vegetarians to be studied representing the range of vegetarian practice in the UK. The representativeness of the sample is discussed in section 2.11.

2.6 Definition of types of vegetarian and selection criteria

A 'voluntary vegetarian' is defined here as an individual who has made a conscious and deliberate decision to modify her/his diet to reduce the amounts of, or totally exclude, foods derived from animals. Within this general category differentiation was made between different types according to the degree of exclusion of animal foods:

- demi-vegetarians: those who eat only fish or 'white' meat, or those who eat any meat occasionally, the common denominator being a conscious decision to reduce consumption of flesh foods;
- lacto-ovo vegetarians: those who eat eggs and/or dairy products but no flesh foods of any kind, including fish;
- vegans: those who eat only foods of plant origin. All flesh foods, eggs and dairy products are excluded from the diet although there may be variation in the extent to which individuals avoid animal-derived foods.

There are no accepted definitions of these categories and there is dispute over some of them. Many strict vegetarians, for instance, object to demi-vegetarians calling themselves 'vegetarian', although in France those who eat meat, fish or poultry any less regularly than once per month are categorised as 'vegetarian' (Millet et al 1989). Demi-vegetarians were included in this study since they have, whatever their reason, made a intentional decision to reduce their intake of meat. No differentiation was made between those who eat fish only (sometimes called pesco-vegetarians (Freeland-Graves et al 1986)), 'white' meat only, or any meat occasionally. Lacto-ovo vegetarians are sometimes divided into lacto-vegetarians who eat dairy products but no eggs, ovo-vegetarians who eat eggs but not dairy products, and lacto-ovo vegetarians who eat both (Anon 1980; Freeland-Graves et al 1980), but were treated as one category in this study since the main research interest was peoples' reasons for abstinence from flesh foods. Vegans are sometimes referred to as 'pure vegetarians' (Calkins 1979; Hardinge and Stare 1954). There is variation in the lengths to which individuals follow their principles: some will check the ingredients of food items such as biscuits and fruit yogurts to ensure that they do not contain animal derived foods such as animal fats or gelatine. Due to the difficulty of following such a stringent diet, particularly in a social context, those vegans who may lapse occasionally through politeness or necessity were included.

This categorisation of different types of vegetarian is based solely on diet and the degree of abstinence from flesh foods, but it is also employed in the nutrition literature on vegetarians (see the references above). It was used as the means to recruit subjects and for preliminary analysis.

Since the aim of the study was to examine the diet and attitudes of adult voluntary vegetarians, those individuals who have been brought up as vegetarian for religious, ethnic or other reasons were not included. Hindus and Rastafarians were thus excluded, but people of Asian or Caribbean origin were included if they had made a personal choice to become vegetarian. 'Adult' was defined as aged 16 and above (that is, people who were presumed to be able to exercise a certain freedom of choice regarding their diet).

Despite various estimates of the number of individuals who are now vegetarian in the UK they remain an uncounted population. This rendered it impossible to formulate a random sampling procedure of any kind. A crude form of quota sampling was therefore used in which roughly equal numbers of the 3 different categories of vegetarian were recruited. A minimum sample size of 120 was set.

The 3 groups of demi-vegetarians, lacto-ovo vegetarians and vegans are hereafter referred to as D, LO and V respectively.

2.7 Methods of recruitment

Most previous studies of vegetarians in the UK have relied upon The Vegetarian Society and/or The Vegan Society to enlist subjects from among their membership (Brooks and Kemm 1978; McKenzie 1971; Roshanai and Sanders 1984; Sanders and Key 1987). Such a sample is doubly self-selected since not all vegetarians are members of these organisations and only certain kinds of individuals join them. In order to reduce this effect, a variety of methods was used to recruit subjects which were intended to reach as wide and as varied an audience as possible. These were:

Round 1: a poster was exhibited in June 1987 at a 'green fair' in West London. This poster described the study and asked anyone interested to fill in a form provided. Round 2: in July 1987 two phone-in appeals for volunteers were made on local radio (Radio London and Capital Radio) and those interested were asked to telephone the radio station or the investigator at the London School of Hygiene and Tropical Medicine.

Round 3: posters (as used in Round 1) were displayed in a selection of health food restaurants and shops all over London. These ranged from the more commercially orientated Holland and Barrett shops, to co-operatives such as Neal's Yard in Covent Garden and The Cherry Orchard which is attached to a Buddhist temple in Bethnal Green. Advertisements for volunteers were also placed in the magazines of the Vegan Society and the Vegetarian Society as members of these should not be excluded.

Rounds 1 and 2 were carried out prior to the data collection and provided the bulk of the sample. Round 3 was carried out simultaneously with data collection. Due to a scarcity of vegans, social networks and the organisation 'London Vegans' were eventually used to contact vegans and recruit the requisite numbers. All subjects were informed of the nature of the study and what participation would entail. Most were very willing and interested in the research.

Table 1: Means of recruitment by vegetarian group (dropouts included)

D=demi-vegetarian, L=lacto-ovo-vegetarian, V=vegan

	Number (percentage)		
GROUP	D	LO	V
Local radio	11	15	1
	(30)	(28)	(2)
Poster at Green Fair, Health food shops, etc.	10	9	10
	(27)	(17)	(23)
Vegetarian Society, 'The Vegetarian'	3	16	3
	(8)	(30)	(7)
Vegan Society, London Vegans, 'The Vegan'	1	1	20
	(3)	(2)	(43)
Social networks [1]	12	13	12
	(32)	(24)	(26)
TOTAL	37	54	46

[1] names passed on by friends, mostly

2.8 Timetable and location of data collection

Both data sets were collected over a period of 1 year commencing September 1987 and ending September 1988. The follow-ups began in February 1988 and also ended in September 1988.

Initial contact with subjects was made by telephone and information regarding their suitability (type of vegetarian and willingness to comply with the requirement of recording their food intake for 3 days) was gathered. A meeting was then arranged which took place in a variety of contexts - home, work, or local hostelry - in which subjects felt relaxed and provided the necessary degree of privacy. At this first meeting the social interview was completed and instructions about the weighed intake given. The second meeting took place on the completion of the weighed intake at the subject's home. The food record was checked for any ambiguities or omissions which were rectified, and the food frequency interview was then conducted.

2.9 Field workers

The investigator was responsible for all data collection, and for part of this time was assisted by a fieldworker (a final year Nutrition student on elective placement). This person was carefully instructed in the purpose of the study, and, before she carried out any interviewing on her own, accompanied the investigator on several visits and was then supervised during her first interviews to ensure consistency in technique. Once the coding frame had been established,

the fieldworker was responsible for the coding and data entry of the social interview. Any difficulties in coding were discussed with the investigator. Two temporary data clerks were recruited and trained to code and enter the food frequency interview data into the computer using D-Base III.

2.10 Data coding and analysis

Establishing a coding frame for open-ended questions is a two-stage process, and was based on a sub-sample of interview schedules following the procedure described by Oppenheim (1978). The first 30 interviews were used, which is more than the 10% sample often recommended (Hoinville et al 1978). The responses to each question were recorded, and then on the basis of these a set of coding categories devised to contain these and subsequent responses. The actual coding categories were based on the grouping of responses that emerged from the data, rather than imposed according to some ulterior logic. In order to minimise the loss of information that inevitably occurs during coding, a large number of categories were used for each variable rather than grouping the responses into a few broad categories. Should responses occur that did not fit in the existing coding categories, the coding frame allowed for new codes to be added to the existing ones. Class was assigned by occupation using the Registrar General's classification of occupations (OPCS 1980). Coding boxes had been included on the final version of the interview schedule which precluded the use of separate coding sheets and facilitated the correction of any coding errors identified during data cleaning.

The coding of the food frequency interview entailed converting the frequency of consumption and average portion size into monthly amounts. Estimated portion sizes, such as teaspoonfuls or cupfuls, were converted into weights using the MAFF portion codes (Crawley 1988). Coding categories were created for the 9 general food categories using the same procedure described above. Fruits were also grouped into 8 categories.

Both coded interviews were entered into the computer via D-Base III and, before analysis, validation checks were run to check for erroneous values. The total number of cases for each variable were checked, that the codes for each variable were in the specified range, and outlying values were investigated. The latter referred primarily to the food frequency data in which some large values were found (and subsequently found to be correct). Coding errors of the qualitative data, however, were hard to identify and some were not found until analysis had commenced, and were then corrected. The analysis of both the social and food frequency interview was carried out by the investigator using SPSS-PC.

The tables in Chapters 3,4 and 5 could have been analysed by the Chi-squared test for association between vegetarian group and categories of response, but since in most cases this would have involved 'collapsing' the tables because of small numbers in some categories, it was decided not to do this. A preliminary analysis also indicated that few, if any, of such tests were likely to provide a significant result. Where there was a valid significant association, the Chi-squared value has been included in the table. The data in Chapter 6 were analysed using the appropriate statistical tests.

The food records were all cleaned, coded and analysed at MAFF using a database compiled by MAFF based on McCance and Widdowson's food tables (Paul and Southgate 1978; Paul et al 1980; Tan et al 1985). Since many rather esoteric vegetarian foods such as tempeh were lacking from these, information from manufacturers and nutrient compositions calculated from recipes used by subjects were used to enlarge the database.

2.11 The sample

There is little demographic information available on vegetarians in the UK and whether they form a distinctive population in terms of age, sex, class and so forth. The study sample is described here and the vegetarians recruited are characterised in terms of age, sex, social class and educational achievement. Although it was not a random sample, the results concur with the findings of market research polls on vegetarians conducted by Gallup (The Realeat Company Limited 1990) and a study in South Wales (Shickle et al 1989). This indicates that the study sample can be taken as fairly representative.

2.11.1 Sample size

A total of 137 vegetarians was recruited composed of 37 D, 52 LO and 38 V. All of these were interviewed but not all completed the weighed intake and food frequency interview. The table below shows the completion rates.

Table 2: Recruitment and completion rates by vegetarian group

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

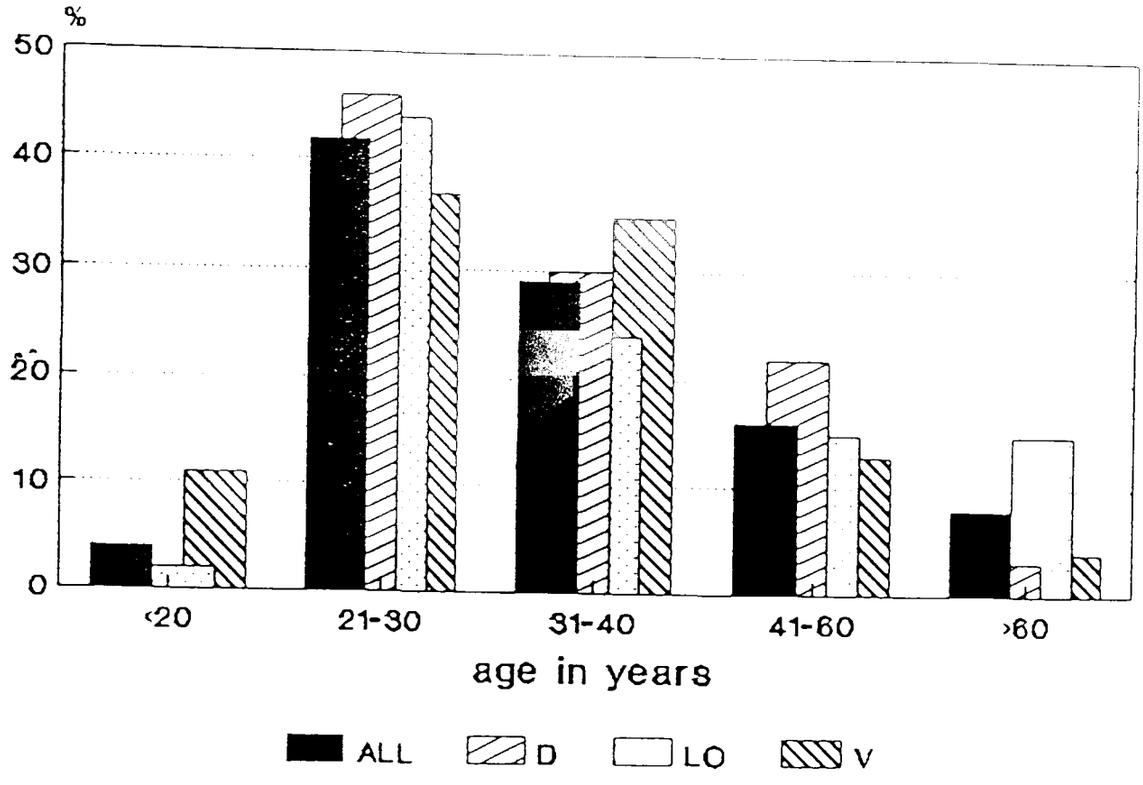
GROUP	D	LO	V	ALL
Recruited	37	54	46	137
ROUND 1				
Completed social interview	37	54	46	137*
Completed weighed intake and food frequency questionnaire(FFQ)	36	52	36	124
Completed weighed intake only	1	0	2	3
Completed FFQ only	1	0	2	3
Completed questionnaire on iodine	N/A	N/A	40	40
Dropped out	0	2	6	8
ROUND 2				
Completed weighed intake	10	14	9	33

* 38 interviews were conducted by the fieldworker

2.11.2 Age and sex

The vegetarians were predominantly young to young-middle aged. When grouped into 10 year age bands, the modal age range was 21-30 years followed by 31-40 years. Interestingly, when further divided into 5 year age bands there appeared to be a break in the distribution at 40 with only a small group of older vegetarians in the 45+ category (see Figure 1 below). The vegetarians in the sample were thus primarily people who had grown up in the 1970s and 1980s, with the immediate post-war generation being the least well represented.

Figure 1: Age structure of whole sample and by group



It can be seen that there are differences in the age structure of each group. The bulk of the members of all groups were in the younger age ranges; although there were a few vegans in the older age bands, they were composed mainly of LO and particularly the 60+ category.

Women predominated in the whole sample (63%) and each of the vegetarian groups, but the sex bias was least pronounced among the Vs (D 65%, LO 69% and V 53%).

Table 3: Cross-tabulation by age, sex and vegetarian group (dietary survey sample only)

GROUP	SEX	AGE RANGE (Y)					
		<20	21-30	31-40	41-60	>60	All
Demi-vegetarian	M	0	4	6	2	1	13
	F	0	9	8	5	2	24
	Both	0	13	14	7	3	37
Lacto-ovo-vegetarian	M	0	9	2	3	2	16
	F	1	13	13	3	3	36
	Both	1	22	15	6	8	52
Vegan	M	0	9	8	1	0	18
	F	3	5	7	3	2	20
	Both	3	14	15	4	2	38
All	M	0	22	16	6	3	47
	F	4	27	28	11	10	80
	Both	4	49	44	17	13	127

This preponderance of women and younger people is confirmed by both anecdotal reports in the media that there are more young people becoming vegetarian, and also by a series of market research polls conducted by Gallup. In 1987 Gallup reported that "women are now twice as likely to be non-meat eating than men, with women in the 16-24 age group leading the way" (The Realeat Company Limited 1987, p2), and their latest report confirms this trend for the seventh consecutive year and also shows a preponderance of women in all age groups (The Realeat Company Limited 1990). A study in South Wales also found a predominance of women among vegetarians. In a systematic sample selected from the electoral register, 2% of the sample categorised themselves as vegetarian, of whom 68% were women compared to 52% women amongst those eating a 'normal' diet (Shickle et al 1989). The vegetarians in the sample were also young; the median age of the vegetarians was 32 years versus 42 years for the 'normal' eaters.

2.11.3 Education and social class

The vegetarians in the sample were mainly from the professional and managerial classes; 58% were from social classes I and II which contrasts with 24% in Greater London as a whole (OPCS 1984). Again there were differences between the groups; the vegans were slightly more evenly distributed between the different social classes, and so less characterised by class than the other 2 groups (46% from social classes I and II versus 65% D and 63% LO). The vegetarians in the sample were all well educated, with 51% holding a university degree, which compares with an average of 6.6% of the population of South East Britain (OPCS 1984). Only 6% had no formal qualifications at all.

Table 4: Distribution of whole group by social class

CLASS	D	LO	V	ALL
1	2	6	4	12 (9)
2	22	28	17	67 (49)
3 NM	7	10	10	27 (20)
3 M	2	5	3	10 (7)
4	0	0	1	1
Other/never worked	1	0	4	5 (4)
Student	3	5	7	15 (11)
TOTAL	37	54	46	137

Table 5: Distribution of whole group by educational level attained

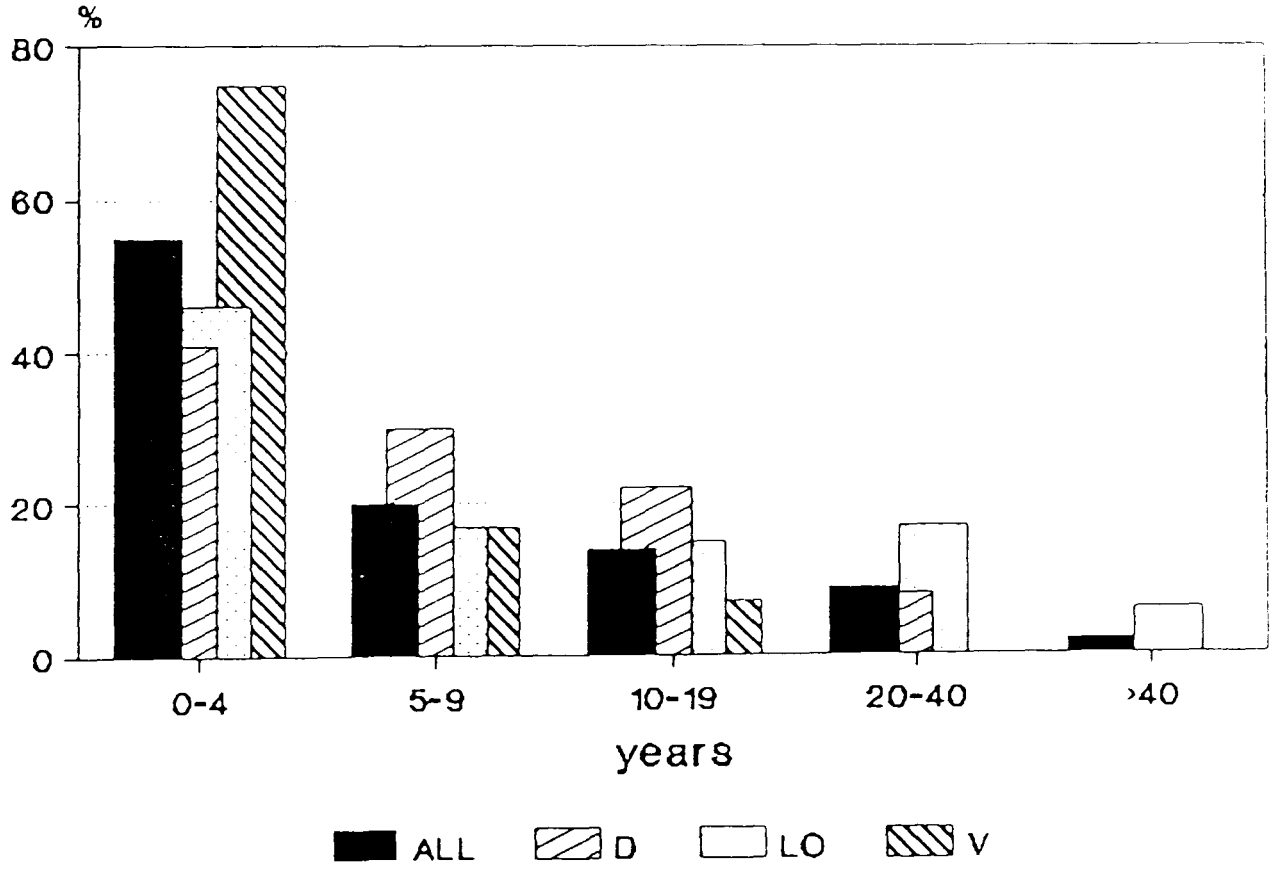
	NUMBER			
	D	LO	V	ALL (%)
No formal qualification	0	5	4	9 (6)
O level or CSE	5	8	9	22 (16)
A levels or HNC	1	12	8	21 (15)
Degree or HND	27	23	20	70 (51)
Other (eg SRN, Secretarial)	4	6	5	15 (11)
TOTAL	37	54	56	137

Although this type of volunteer-based research is likely to attract more middle-class subjects, the heavy over-representation of social classes 1-3N is corroborated by the Cardiff study in which 40% of the vegetarians came from social classes I and II and 30% had been to university compared with only 29% and 9% respectively of the 'normal' group (Shickle et al 1989). The latest Gallup report found that "pure" vegetarians (the term is not defined) "are nearly twice as likely to be found in the higher social grades", although the C1s have now overtaken the ABs (The Realeat Company Limited 1990, p4). With regard to red meat avoidance or the broader category of reduced meat consumption, however, the poll found less class differentiation.

2.11.4 Length of time of vegetarian

There was a very wide range of the number of years spent on the current diet, extending from under 1 year to over 63 years, but most had not followed their present dietary regimen for more than 5 years. There were marked inter-group differences: the demi-vegetarians had a group mean of 7.7 years spent on the diet with a range of 30 years; the lacto-ovo vegetarians a group mean of 11.5 years and range of 63 years; and the vegans a group mean of only 3.2 years and range of 10 years.

Figure 2: Length of time spent on the current diet



This indicates that many of the vegans are quite recent 'converts' and that veganism in particular is a relatively new phenomenon occurring within the last decade. Within group LO there appears to be a small stable group of long-serving members to which have been added a large number of younger recruits during the last 10 years. From this data it does appear that there is a 'new vegetarianism' - a wave of new recruits, mostly young, occurring within the last decade. This phenomenon has also been recognised in the United States and has been the subject of several studies (Dwyer et al 1973; Dwyer et al 1974a; Dwyer et al 1974b; Kandel and Pelto 1980).

2.11.5 Household structure and other lifestyle differences

The vegetarians showed a tendency to be solitary people, especially the Vs: 45% Ds, 65% LOs and 72% Vs were single; 11% Ds, 31% LOs and 30% of Vs lived alone; and 30% Ds, 44% LOs and 63% of Vs cooked for themselves. This apparent social isolation of the Vs, however, was countered by the observation that many vegans had strong social networks with other vegans which were often focused on a vegan shop or restaurant. It should also be remembered that the single status of Vs may be a product of their youth. Some Vs also lived in all-vegan households, a phenomenon not encountered among the other two groups. The importance of group membership for vegetarians, especially those with far-reaching food avoidances, has also be observed in the United States (Dwyer et al 1973; Dwyer et al 1974a; Dwyer et al 1974b; Freeland-Graves et al 1986a; New and Priest 1967).

Just over half of the sample and slightly more of the Vs had another family member who was vegetarian; 56% overall, and 63% Vs, 52% LOs and 54% Ds. These were partners (26% of those with a vegetarian family member), parents (26%), siblings (27%) and children (16%). A similar trend was also found in the United States by Freeland-Graves et al (1986); 47.1% pesco-vegetarians, 36.6% lacto-ovo vegetarians, 50.0% lacto vegetarians and 69.2% of vegans had family members who were also vegetarian.

Most people (57%) in the sample described themselves as atheist, but amongst those who were religious there was a surprising range of belief; 39% were Christian of some denomination (none were Seventh Day Adventist or Trappist monks), 15% were Buddhist, and 34% adhered to so-called 'fringe' religions. This category included earth and nature cults, spiritualists and mystics, New Age cults, pagans and one Egyptian Neophyte. There was no association with group although slightly more of the Ds and Vs were members of these religions (47% Ds and 39% Vs were members of 'fringe' religions versus 19% LOs), and all but one of the adherent to 'fringe' religions fell into the category of 'new' vegetarians. The percentage of people who were Christian (17% of the whole sample) was just over the national average of 15%, but the proportions of Buddhists and spiritualists (both 7% of the whole sample) were much higher

than the national averages of 0.05% and 1.1% respectively (Brierley 1988). Unfortunately, no information regarding prevalence could be found on the other religions, although paganism in the form of 'neo-paganism' is reported by newspapers such as The Guardian to be enjoying a revival of interest, often in association with the 'New Age' movement.

In the US, Freeland-Graves et al (1986a) found that religion was a motivating factor for only 10% of vegetarians in their age- and sex-matched sample of vegetarians and non-vegetarians, and traditional religions were practised by 26% of vegetarians versus 59% of non-vegetarians. However, more vegetarians followed non-traditional religions.

CHAPTER 3: DECISIONS SURROUNDING THE 'VEGETARIAN' DIET

3.1 Introduction

In Chapter 1 different models of dietary selection were discussed. Most of these treat food choice as a discrete one-dimensional event related to a particular goal or benefit, which is usually conceptualised in physiological or health terms, and even in the models drawn from social psychology there is a neglect of the social context of the decision-making process and the role of personal experience. Although it is recognised that people are not always cognizant of all the factors influencing their behaviour, there have been very few studies in which subjects have systematically been asked why they eat what they eat. This would appear to be a relevant question with regard to vegetarians since they are individuals who have made a self-conscious, intentional decision to alter their diet in accord with certain attitudes and beliefs. Hence in this study subjects were asked a series of open-ended questions about how and why they became vegetarian. They were also questioned about any changes in their motivation for remaining vegetarian and if they had always followed the same type of vegetarian diet.

There is little other research with which to compare the findings of this study, particularly with regard to British vegetarians. Three studies and a Gallup market research poll have been carried out in the UK, but two, on vegans, are quite old (Brooks and Kemm 1978; McKenzie 1971). The findings of these are discussed and also comparable research carried out in the USA which has looked at the motivation of vegetarians.

3.2 Original motive(s) for becoming vegetarian

In answer to the question 'Why did you first become vegetarian?' a very wide range of responses was given and it was difficult to establish coding categories which did justice to this diversity. Initially, a broad range of different coding categories were used, 22 in all, to encompass the full range of responses cited by subjects. For analysis these were grouped into 6 basic categories which corresponded to logical groupings which emerged from the preliminary coding categories. These are described below:

1. Moral/ethical

This included 6 categories of response in which the words 'moral' or 'ethical' were explicitly used, or in which they were implicit, such as condemnation of the exploitation, suffering, or killing of animals involved in meat production. The common denominator was the sense of wrongness in killing and eating animals and the questioning of humans' moral right to dominate and exploit animals.

2. Ecology/political

The 3 categories grouped together here were those who had cited concern for ecology, politics or the world's resources. These responses included a sense of moral or ethical commitment; this was not confined to animals but extended to global issues such as concern for the environment, the efficient use of land resources and the Third World. This point of view did not necessarily imply that eating animals was morally wrong, but that like all natural resources should responsibly managed and treated.

3. Preference

This category included 4 types of response - those who disliked meat, those who disliked other animal foods, those who preferred vegetable foods, and those who found a vegetarian diet more enjoyable. These were all essentially aesthetic or organoleptic reasons (taste, smell, appearance and so forth) because they indicated either a dislike for meat or a preference for vegetable foods. There was no indication of moral/ethical motives.

4. Health

This category was not aggregated with any other, and included all those who said they had become vegetarian because of the health benefits, however construed, of such a diet. Again, there was no indication of moral/ethical elements in motivation.

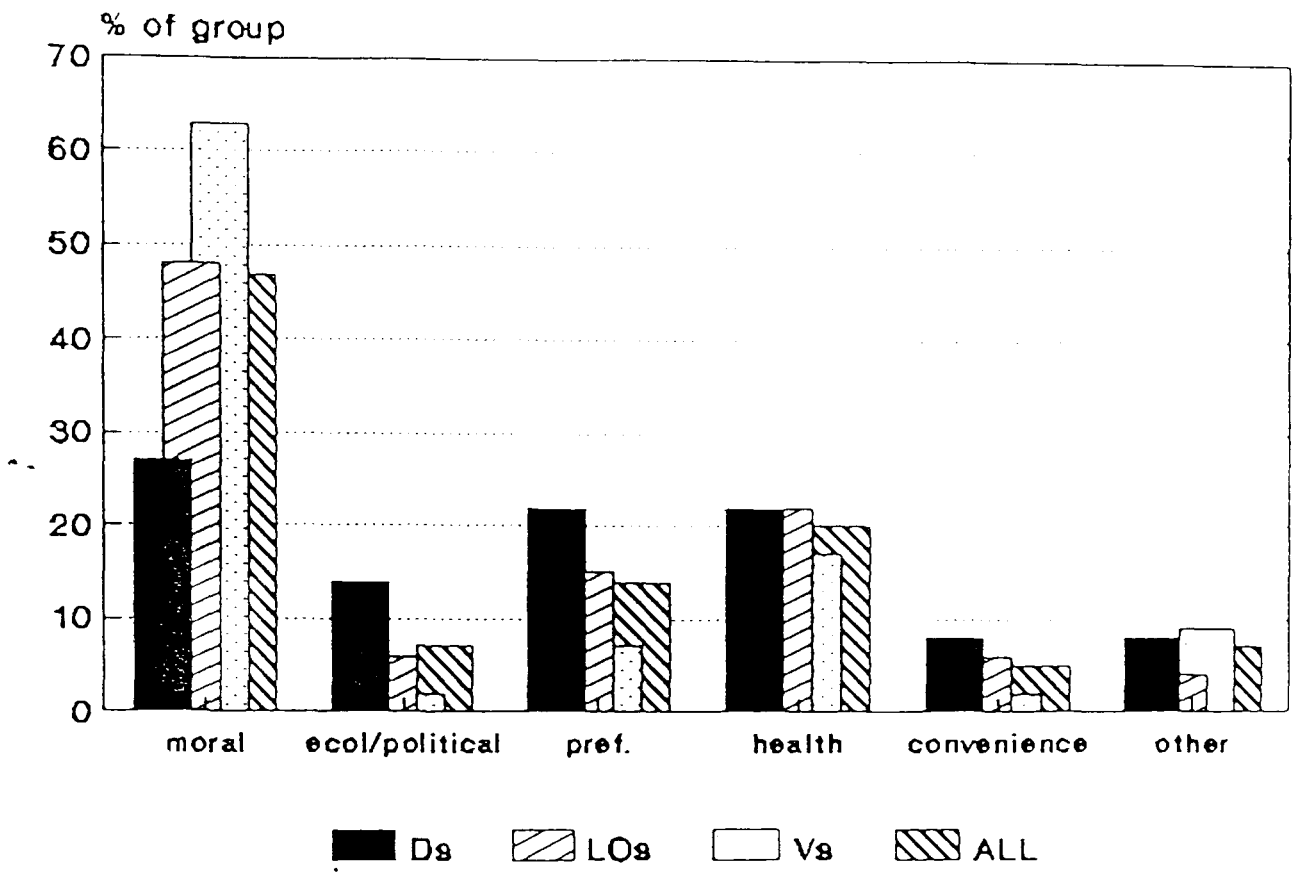
5. Convenience

This category was used to refer all those who had cited a personal benefit (cost or convenience) without any moral/ethical overtones.

6. Other

This residual category contained a farrago of answers such as self-experimentation, that eating meat is physiologically unnatural for humans, or that becoming vegetarian was an expression of independence.

Figure 3: Original reasons for becoming vegetarian First response:



It can be seen that the most common broad reasons were moral/ethical, health and preference, in descending order. There was a clear but non-significant association with type of vegetarian; the majority of the Vs and about half of the LOs gave an ethical type of reason as opposed to a quarter of the Ds. The LOs and Vs both shared health as the second most popular reason. The Ds were not strongly characterised by any single type of motive, with almost equal numbers citing moral/ethical reasons (27%), preference and health (both 22%) There were also weak but non-significant associations with age and sex. More younger people gave moral/ethical (78% were under 45) and ecology/political reasons (89% were under 45), and more older people cited health. Of those who gave moral/ethical reasons and preference, 65% and 79% respectively were women. If looked at in terms of 'old' and 'new' vegetarians (that is, dividing the sample according to the length of time spent on the current diet), moral/ethical type reasons still predominated overall but within this category 82% were 'new' vegetarians and no 'old' vegetarians cited ecology/political type motives. It thus appears 1) that the younger people in the sample were primarily concerned with ethics and ecology whereas for the older people there was no predominant category of motivation, and 2) that the more extensive the avoidance of animal foods, the more likely it is that an individual's motives are of an ethical or altruistic nature.

Table 6: Reason for being a vegetarian by sex and age

SEX	FEMALE	MALE	TOTAL
	No (%) in group		
moral/ethical	42	23	65
	(49.4)	(44.2)	(47.4)
ecology/political	4	5	9
	(4.7)	(9.6)	(6.6)
preference	15	4	19
	(17.6)	(7.7)	(13.9)
health	16	12	28
	(18.8)	(23.1)	(20.4)
convenience	3	4	7
	(3.5)	(7.7)	(5.1)
other	5	4	9
	(5.9)	(7.7)	(6.6)
TOTAL	85	52	137
	(62.0)	(38.0)	(100.0)
	AGE (years)		
AGE	<45	>45	TOTAL
	No (%) in group		
moral/ethical	51	14	65
	(47.7)	(46.7)	(47.4)
ecology/political	8	1	9
	(7.5)	(3.3)	(13.9)
preference	16	3	19
	(15.0)	(10.0)	(13.9)
health	19	9	28
	(17.8)	(30.0)	(20.4)
Convenience	6	1	7
	(5.6)	(3.3)	(5.1)
OTHER	7	2	9
	(6.5)	(6.7)	(6.6)
TOTAL	107	30	137
	(78.1)	(21.9)	(100.0)

There are few other studies of vegetarians with which to corroborate these findings. Two studies of vegans in the UK, one the 1960s (McKenzie 1971) and one in the 1970s (Brooks and Kemm 1978), found the same pattern of motivation: in both studies respondents ranked ethical concerns as the most important, followed by health, and lastly concern about world food shortages. McKenzie notes that the latter was rarely the initial reason for adopting veganism, but tended to provide further rational justification to support the decision once it had been made. It is interesting that neither ecology nor concern for the environment figured in peoples' motivation in either of these studies; these are contemporary issues which came to the fore in the 1980s. A more recent study of vegetarians (Keil and Beardsworth 1991), however, found that in a sample of vegetarians and vegans moral reasons predominated (43/78, or 55%) followed by health (13/78, or 17%), and taste (9/78, or 12%). A small group had mixed reasons (10/78 or 13%). The authors do not state whether 'moral' reasons included ecological

issues and they did not disaggregate motives by the different types of vegetarian, but otherwise their findings support those reported here. Unfortunately, the latest Gallup survey of changing attitudes to meat consumption, which includes people who have partially but not completely reduced their meat intake, also does not disaggregate the motives of the different sub-groups in their sample (The Realeat Company Limited 1990). The survey found that among those claiming to be 'eating less meat' the most common reason overall was health (40%), but that the pattern of other reasons for eating less meat showed age, sex and class differences: moral reasons were more likely to be cited by women, particularly in the 16-24 age bracket, and by social classes AB and C1; health reasons were most cited by women in the 45-64 age group, and by more of the ABs compared to the DE social groupings; financial reasons were most likely to be given by women over 65, and the C2 and DE groupings; and taste was most quoted by women aged 25-34. This would confirm that moral/ethical type reasons tend to be the preserve of younger people and women, that older people are more concerned about health, and that women are more motivated by taste or preference.

From the few studies of American vegetarians, it appears that they are less characterised by any single category of motive and cite a wide range of reasons for adopting a vegetarian diet with concern for health the most popular (Cooper et al 1985; Dwyer et al 1974b). Calkins (1979) classifies the reasons reported by American vegetarians into; health and nutrition, ethical and metaphysical considerations, ecological and economic, aesthetics, food preference, religion, politics, and interest in 'organic' and 'natural' foods. No-one in this sample cited 'religious' reasons for becoming vegetarian, and, although individuals who had been brought up as a Hindu or Rastafarian were excluded, people who had become Buddhist later in life were included. In the USA, unlike the UK, the strong historical links between the (vegetarian) Seventh Day Adventists and other Christian groups remain strong into the present day (Roe 1986).

Most people (69%) gave more than one reason, but only 34% gave more than two reasons. It should be noted that an individual could give several responses which might fall into the same coding category. When several reasons were analysed moral/ethical and health reasons were still the most popular (52% and 17% respectively of second reason) but ecology (9%) now occupied third place. Only 3% cited preference as a second reason. There was no difference between the groups in numbers of reasons for becoming vegetarian, but again more of the Vs and LOs gave moral/ethical reasons than the Ds who were more interested in ecology. The same pattern persisted amongst those with a third reason.

Figure 4: Original reason for becoming vegetarian Second response:

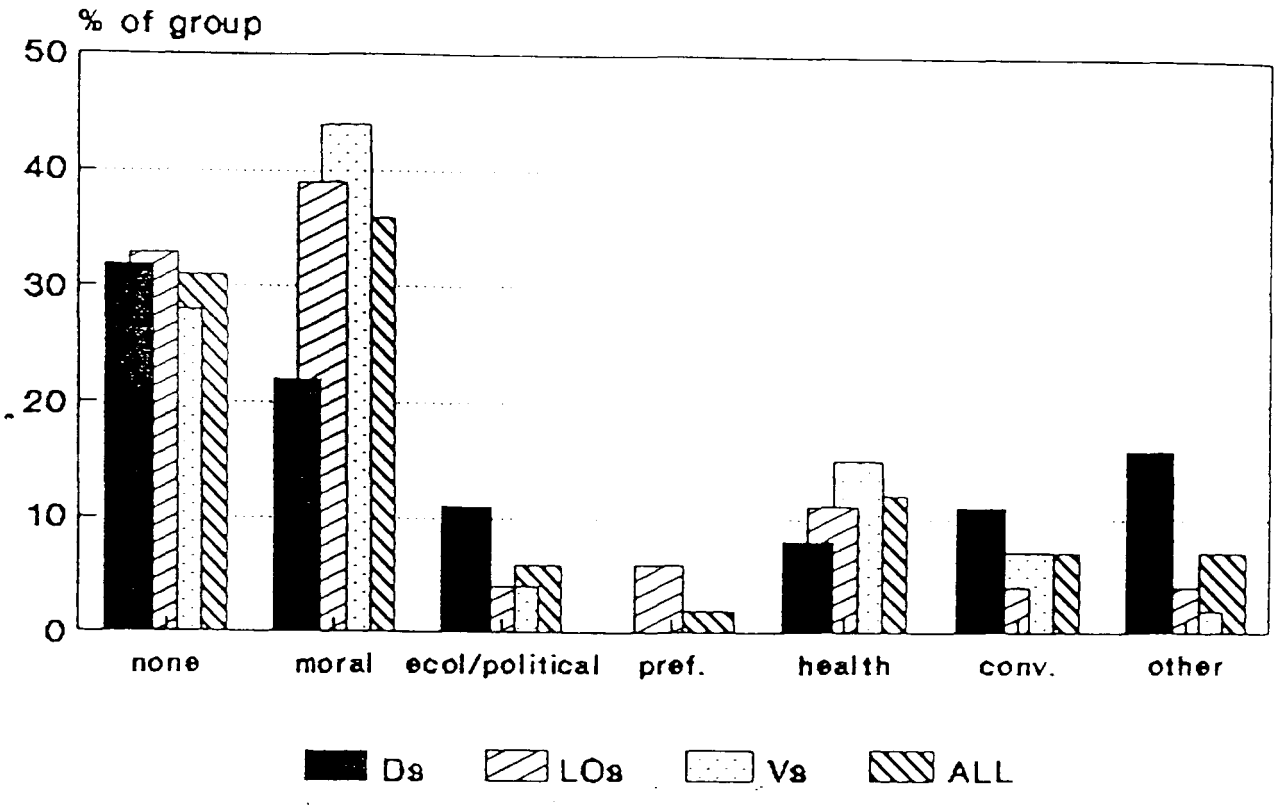
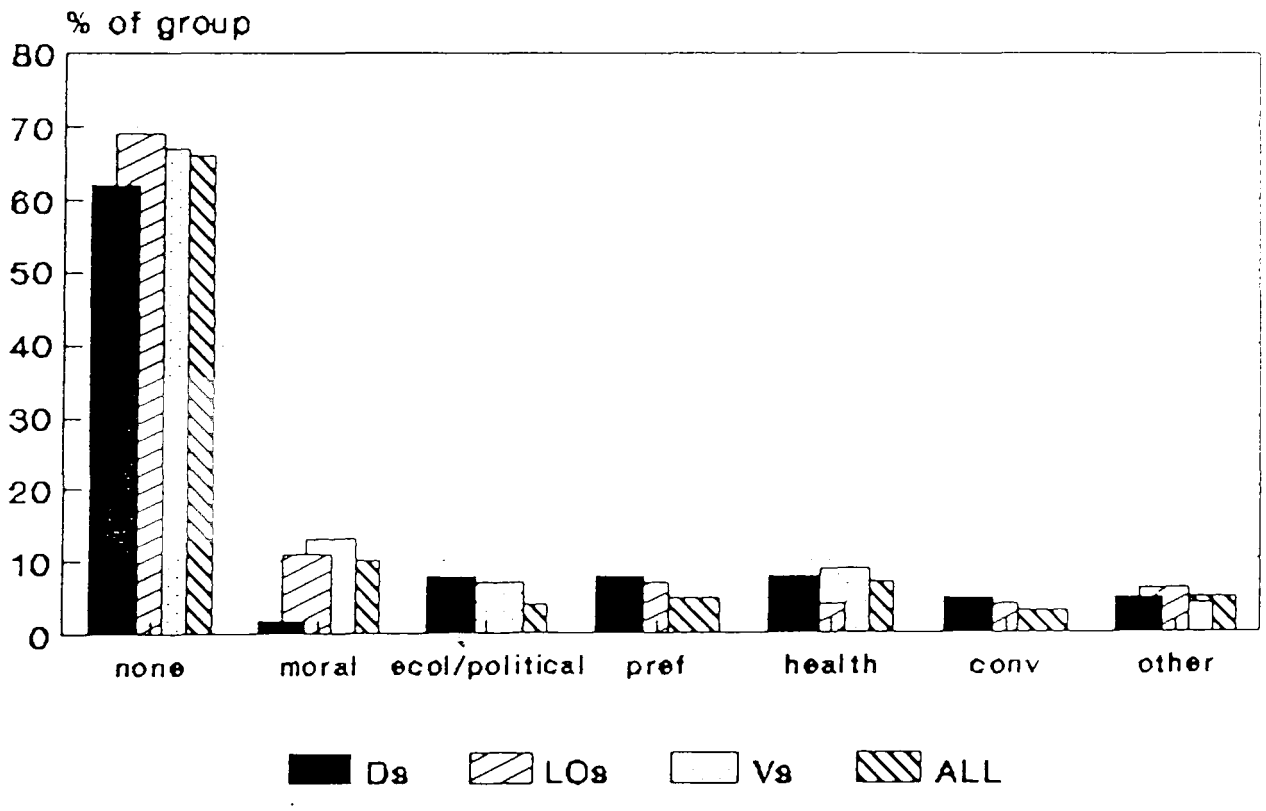


Figure 5: Original reason for becoming vegetarian by group Third response:



3.3 Influences

Half the sample felt that they had been consciously influenced by another person in their decision to become vegetarian. There was no difference between the groups or sexes, but there was a slight age difference with fewer in the over 60 category (36%) and fewer of those who had been vegetarian over 10 years saying they were influenced (37%). The main source of influence was peers for all groups (51% overall, 50% Ds, 57% LOs and 46% Vs), followed by media and books (15%), and partners (12%). Only one person cited religion as a direct influence, and parental influence was markedly lacking, cited by only two individuals. The Ds were more influenced by their partners than the other two groups (25% Ds, 13% LOs and no Vs among those influenced) and the Vs more by media and books (27% Vs versus 5% Ds and 9% LOs among those influenced). This suggests that many of the Ds may be vegetarian through association or 'captive vegetarians'. There were no other pronounced differences between the groups but again there were was a slight age difference; the influence of peers was felt most among those in the 20-30 age group (67%) and least in the over 40s (23% in 40-60 and 25% in 60+ age groups), and more by the 'new' vegetarians (54% versus 30% 'old' vegetarians. The influences affecting older individuals varied. More of the 'captive' vegetarians were women (75%), but there were no other marked sex differences.

Table 7: 'Did anyone influence your decision to become vegetarian?'
D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
	No (%) in group			
yes	20 (54.1)	23 (42.6)	26 (56.5)	69 (50.4)
no	17 (45.9)	31 (57.4)	20 (43.5)	68 (49.6)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 8: 'If yes, who?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
partner	5 (25)	3 (13)		8 (11.6)
parent	1 (50.0)		1 (3.8)	2 (2.9)
peers	10 (50)	13 (56.5)	12 (46.2)	35 (50.7)
activists	1 (5.0)		3 (11.5)	4 (5.8)
religious group		1 (4.3)		1 (1.4)
media/books	1 (5.0)	2 (8.7)	7 (26.9)	10 (14.5)
other	2 (10.0)	4 (17.4)	3 (11.5)	9 (13.0)
TOTAL	20 (29.0)	23 (33.3)	26 (36.7)	69 (100.0)

3.4 How the decision was implemented

For most people (72%) the decision to become vegetarian was not a sudden one but had evolved over a period of time. Slightly more Vs made a sudden decision (35% versus 22% Ds and 26% LOs) but this was not significant. Many people reported thinking about becoming a vegetarian for some time with the final decision being triggered by an event or personal experience. These varied. One common category of experience involved the realisation of what meat-eating involves for animals and these episodes included working in a abattoir, seeing a documentary about factory farming, watching live crabs being cooked, seeing chickens being slaughtered and so forth. For some people the final push came from a significant other, such as a girl/boy friend or child, becoming vegetarian, or through association with vegetarians. One man was converted by going on holiday with a group of friends who were all vegetarian, and several vegans reported having taken the final step when they joined an animal liberation group. Illness was also mentioned, either caused by eating meat or through its alleviation after adopting a vegetarian diet. Nearly all of these people, however, said that the decision to become vegetarian was already on their mind and that these experiences were the final precipitating factor. Keil and Beardsworth (1991) also examined the process by which the vegetarians in their sample had become vegetarian. What they describe as the "process of conversion" was very variable. Some respondents described their adoption of vegetarianism in very practical terms, for instance one person who had never particularly liked meat found that becoming vegetarian provided her with a more socially acceptable reason for not eating meat and helped remove her reputation of being a "fussy eater". For

others, becoming vegetarian was seen as "inevitable" once they had become aware of what was involved in meat production, and some people experienced a more sudden conversion which was, as for some of the people in this sample, often occasioned by a dramatic presentation of abuse to animals. Finally, for a few individuals it was part of a growing political awareness. Some of these paths of conversion - the growing conviction that meat-eating is wrong, the sudden triggered "conversion", and the increasing broader awareness - corresponded with the process of decision-making described by respondents in this study. Keil and Beardsworth found that many of their subjects stressed the individuality of their decisions and they do not report if any them had been influenced by anyone, whereas for half of those in this study the influence of others had been at least a contributing factor in their decision to become vegetarian.

Table 9: 'Was it a sudden decision?'

D=demi-vegetarian, LO=lacto-ovo-vegetarian, V=vegan

	D	LO	V	TOTAL
		No (%) in group		
DK		1		1
		(1.9)		(.7)
yes	8	14	16	38
	(21.6)	(25.9)	(34.8)	(27.7)
no	29	39	30	98
	(78.4)	(72.2)	(65.2)	(71.5)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100)

When it came to executing this decision, just over half (56%) changed their diet immediately, with no difference among the groups. Amongst those who implemented their decision gradually just over half (55%) said that this process had been random, but among those who had changed their diet slowly a common pattern of elimination emerged based on a differentiation between types of animal flesh. There was a general progression starting with the initial exclusion of red meat from the diet (52% of those people who had been systematic), then white meat (41%) and finally fish (16%). A small number (11% of those who were systematic) only discriminated between meat and fish. The vegans discriminated least between different flesh foods; they mostly gave up all kinds of meat and then all animal foods (33% of all Vs), although there was a small minority who renounced red meat only before giving up all animal foods (9% of all Vs). This shows a difference in the way different types of flesh foods are perceived and categorised which is discussed in section 5.5.

Table 10: 'Did you stop eating meat overnight or was it a gradual change ?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
gradually	23 (62.2)	27 (50.0)	27 (58.7)	77 (56.2)
suddenly	13 (35.1)	26 (48.1)	19 (41.3)	58 (42.3)
DK	1 (2.7)			1 (.7)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 11: 'Can you describe how you changed your diet?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
DK		1 (1.9)		1 (.7)
gave up: red meat:	3 (8.1)			3 (2.2)
red then white	11 (29.7)	4 (7.4)		15 (10.9)
red then white then fish	1 (2.7)	9 (16.7)		10 (7.3)
red then animal foods			4 (8.7)	4 (2.9)
any meat then fish		7 (13.0)		7 (5.1)
any meat then all animal foods			15 (32.6)	15 (10.9)
no special order	20 (54.1)	30 (55.6)	25 (54.3)	75 (54.7)
other	2 (5.4)	3 (5.6)	2 (4.3)	7 (5.1)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

3.5 Changes in motivation

Most (75%) of the sample felt that their reasons for remaining vegetarian had changed in some way, either in terms of the degree of commitment they felt (by which is meant the degree of adherence to certain beliefs or values) or in the nature of their motivation (that is, a more qualitative change in the content of belief). More Vs reported a change in their motives than the other two groups (70% Ds versus 69% LOs and 85% Vs). The main change was increased

commitment (27% Ds, 20% LOs and 41% Vs). Only one person felt less committed. The other changes were the addition of new reasons - 15% now included health, 15% now included moral/ethical type reasons and 13% now included ecology. There were slight differences among the groups, with more of the Vs now including ecological concerns amongst their reasons, which is consonant with the finding of McKenzie (1971) that concern about world issues tended to provide added justification to support an existing decision. Conversely, slightly more of the Ds and LOs were now adding health and concern for the issues of animal rights and welfare. The extension of commitment appears to be towards that sphere not originally present in an individual's motivation for adopting vegetarianism. There were no pronounced age or sex differences, but the sense of increased commitment was greatest amongst the 'new' vegetarians; of those whose reasons had changed, 42% were 'new' vegetarians versus 18% of 'old' vegetarians. More of the 'new' vegetarians were now including ecology whereas more of the 'old' vegetarians were adding health and ethics to their reasons, which is a further indication that ecology is a fairly new argument for vegetarianism. The motivation of the majority in this sample for remaining vegetarian had both deepened and broadened, adding further justification to support their initial decision.

Table 12: 'Have your reasons changed in any way?' (by vegetarian group)

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
	No (%) in group			
No	11 (29.7)	16 (29.6)	6 (13.0)	33 (24.1)
now include health	5 (13.5)	9 (16.7)	7 (15.2)	21 (15.3)
now include moral/ethical	5 (13.5)	10 (18.5)	5 (10.9)	20 (14.6)
now include ecological/ political	3 (8.1)	6 (11.1)	9 (19.6)	18 (13.1)
less committed		1 (1.9)		1 (.7)
more committed	10 (27.0)	11 (20.4)	19 (41.3)	40 (29.2)
other	3 (8.1)	1 (1.9)		4 (2.9)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

3.6 Changes in type of vegetarian

Subjects were categorised on the basis of their current diet but 56% reported having followed other types of vegetarian diet. Consonant with the changes in motivation most people were following increasingly strict diets, that is excluding more animal foods. There were marked differences between the groups; 78% of Ds and 82% of LOs had not changed their diet, but only 9% of Vs had not changed their diet. Of the Vs 89% had been previously been LO and/or D, and 15% of the LOs had previously been D. The 'old' vegetarians appeared to be a more stable group (78% had always eaten the same type of vegetarian diet), whereas the 'new' recruits were more experimental (51% had always eaten the same type of vegetarian diet).

There thus appears to be a movement through the spectrum of vegetarian diets moving from D to LO and finally to V. There were a few, however, who had moved in the opposite direction; there were 4 'lapsed' vegans and 6 'lapsed' LOs. Veganism, however, is not quite the final step; one fruitarian was recruited who lived primarily on fruit and nuts, the logic of this diet being that plants should not be killed. For many of the Vs, and this was overtly stated, the adoption of a vegan diet was a logical extension of their beliefs and corresponded with their increased feelings of motivation just described, and 2 more of the Vs were contemplating becoming fruitarian.

Table 13: 'Have you always eaten the same kind of vegetarian diet that you eat now?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
Yes	29 (78.4)	44 (81.5)	4 (8.7)	77 (56.2)
D to L		8 (14.8)		8 (5.8)
D to V			1 (2.2)	1 (.7)
L to V			28 (60.9)	28 (20.4)
L to D	6 (16.2)			6 (4.4)
V to L		2 (3.7)		2 (1.5)
V to D	1 (2.7)			1 (.7)
D to L to V			10 (21.7)	10 (7.3)
D to V to D	1 (2.7)			1 (.7)
L to D to V			2 (4.3)	2 (1.5)
other change			1 (2.2)	1 (.7)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

3.7 A literally consuming philosophy?

Given these changes in motivation and in type of vegetarian diet followed, vegetarianism appears to contain a certain compulsive quality which draws people in deeper and deeper. Added to this is the fact that for many people vegetarianism is more than a dietary regimen but a whole lifestyle. One V reported that it had become 'almost a religion' for him, an encompassing world view which extended to all aspects of his life. The pattern of decision-making described by subjects also corresponds in some ways to religious conversion processes as described by Robbins (1988) in that it involves, for some people, a quite radical change in belief and in personal identity.

In an attempt to gauge the extent to which individuals had integrated their diet into their lifestyle and to demonstrate that the decisions regarding diet were not isolated, subjects were asked about a selection of linked topics: their use of cosmetics and toiletries containing animal products or which had been tested on animals; whether they wore leather shoes; membership of organisations linked to their diet such as The Vegan/Vegetarian Society; willingness to compromise themselves in a social context by eating meat; and, if they felt that they made an effort to spread their views about vegetarianism. In all of these there was a sharp gradient with significantly more Vs making a greater effort to alter other aspects of their lifestyle to be consonant with their diet: 30% of Ds, 54% LOs and 78% of Vs belonged to a linked organisation; 68% of Ds, 82% LOs and 96% Vs avoided using cosmetics or toiletries containing animal products/tested on animals; 3% Ds, 20% LOs and 65% of Vs avoided wearing leather shoes; 46% Ds, 6% LOs and 2% Vs were willing to eat meat in a social context where to do otherwise would cause embarrassment; and finally, 46% of Ds, 54% LOs and 61% Vs considered themselves to do something about spreading their views regarding vegetarianism.

Already it can be seen that the decisions to adopt a vegetarian diet made by the people in this sample were not discrete, static events guided purely by knowledge or some pre-defined goal, but were the products of a complex, continually evolving process embedded in personal experience with a strong affective component. For the majority of people the decision to become vegetarian could not be linked to a personal benefit (the benefits derived from being vegetarian are discussed in the next chapter, section 4.3), and as the diet became more extreme so the motivation for following it was more likely to be of an altruistic and disinterested nature. Interestingly, vegetarianism seems to possess a certain addictive element for some individuals leading them to extend their attitudes regarding diet to other aspects of their lifestyle and follow an increasingly strict vegetarian diet - indeed a truly consuming philosophy.

Table 14: Use of leather products

	D	L	V	TOTAL
		No (%) in group		
don't use	1	11	30	42
	(2.7)	(20.4)	(65.2)	(30.7)
use	36	43	16	95
	(97.3)	(79.6)	(34.8)	(69.3)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

X^2 : $p < 0.001$

Table 15: Use of cosmetics tested on animals

	D	L	V	TOTAL
		No (%) in group		
DK	1			1
	(2.7)			(0.7)
don't use	25	44	44	113
	(67.6)	(81.5)	(95.7)	(82.5)
use	11	10	2	23
	(29.7)	(18.5)	(4.3)	(16.8)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

X^2 : $p < 0.05$

Table 16: 'If you have been invited out for a meal and you are served meat, what do you do?'

	D	L	V	TOTAL
		No (%) in group		
only eat plant	14	43	34	91
foods	(37.8)	(79.6)	(73.9)	(66.4)
eat small amount	17	3	1	21
of animal foods	(45.9)	(5.6)	(2.2)	(15.3)
it depends	6	2	2	10
	(16.2)	(3.7)	(4.3)	(7.3)
eat nothing		4	9	13
		(7.4)	(19.6)	(9.5)
other		2		2
		(3.7)		(1.5)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

Table 17: 'Do you do anything to spread your views on vegetarianism?'

	D	L	V	TOTAL
	No (%) in group			
yes	17	29	37	83
	(45.9)	(53.7)	(80.4)	(60.6)
no	20	25	9	54
	(54.1)	(46.3)	(19.6)	(39.4)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

$X^2 : p < 0.005$

CHAPTER 4: HEALTH KNOWLEDGE, BELIEFS AND ATTITUDES

4.1 Introduction

Because a vegetarian diet has now been seen to conform in many ways to 'healthy eating' as it is presently defined (DHSS 1984; James 1983), there has been a re-evaluation of vegetarian diets, but, as discussed in the last chapter, this has led to the assumption that people adopt a meatless diet for primarily health reasons. In Chapter 3, however, it was shown that peoples' motivation is complex and incorporates more than one line of reasoning. Nonetheless, health was an important factor cited by 20% of the sample. Studies of vegetarians in the USA and UK have shown vegetarians to have a stronger orientation towards health and nutrition matters than non-vegetarians (Dwyer et al 1974b; Freeland-Graves et al 1986; Shickle et al 1989b; Sims 1978; Twigg 1979). These studies also showed that vegetarians tended to be more sympathetic towards so-called alternative types of medicine and that many vegetarians express hostility towards conventional medicine. The aim of this chapter therefore, is to explore the opinions towards health held by the vegetarians in this sample and locate them within the context of a more widespread change in attitudes regarding health and medicine in the UK.

Since the 1970s there has been a growing dissatisfaction in the UK with conventional medicine, by which is meant modern Western biomedicine which focuses primarily on the somatic and physiological aspects of illness in both diagnosis and treatment (Engel 1977), and this has been accompanied by an increasing interest in alternative or complementary medicine. This general rubric covers a very wide range of therapies and treatments such as wearing crystals, eating 'health' foods, reflexology, naturopathy, homeopathy, herbalism, acupuncture and so forth. These therapies are very diverse in methods of diagnosis and cure but, as Coward (1989) in her study of alternative medicine demonstrates, are all based on a new philosophy of the body, health, nature, and the role of the individual in health. Great stress is placed on diet in this philosophy and it will be discussed in more depth in section 4.7. This shift in attitudes is not confined to a few 'cranks' and some forms of alternative medicine, such as acupuncture, have now acquired respectability and even a grudging acknowledgement from the medical establishment. Many people now 'shop around' when seeking medical treatment, a situation described as 'medical pluralism' usually with reference to developing countries but which also exists in the UK (Helman 1978).

Concurrent with this movement, conventional Western medicine has also placed an increasing emphasis on the role of diet and other lifestyle factors, such as smoking and drinking alcohol, in the aetiology of the so-called 'Western diseases' of cardiovascular disease, diabetes, obesity, cancer, constipation and so forth (see for example, DHSS, 1984; Dobbing, 1988; Trowell, 1976). An increasingly heavy onus is being placed on individuals by both the medical

establishment and the alternative health movement to modify their diet and lifestyle to maintain health and avoid illness.

4.2 Concepts of health and its interaction with diet

All subjects were asked to describe how they envisaged the state of 'good health'. These responses are hard to categorise as most definitions contained several strands, such as both mental and physical well-being. In Table 18 below, the first two categories refer to physical or mental well-being only, but the third category 'feeling good' contains those responses which referred to both physical and mental states. 'Energy' refers to the possession of physical energy, but also to more intangible and qualitative feelings of vitality and life.

Table 18: 'What does it mean to you to be in good health?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
physical well being	8 (21.6)	9 (16.7)	8 (17.4)	25 (18.2)
mental well being	2 (5.4)	2 (3.7)	2 (4.3)	6 (4.4)
feeling good	11 (29.7)	17 (31.5)	11 (23.9)	39 (28.5)
'energy'	7 (18.9)	9 (16.7)	11 (23.9)	27 (19.7)
no illness	4 (10.8)	12 (22.2)	9 (19.6)	25 (18.2)
freedom/capacity	3 (8.1)	3 (5.6)	3 (6.5)	9 (6.6)
correct weight			1 (2.2)	1 (.7)
other	2 (5.4)	2 (3.7)	1 (2.2)	5 (3.6)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

From this table it can be seen that only 18% limited their description to the absence of disease. A further 18% defined it in purely somatic terms as 'physical well-being' but in a more positive sense to include a sense of fitness or strength. The largest category of response (29%) was 'feeling good', which was often extended to include emotional states. These states were various - for instance, 'feeling happy', 'having a clear mind', having 'peak experiences', sensation of internal harmony/balance, waking up feeling happy - and some people extended 'good health' to include such things as being able to cope with life and being in harmony with the environment. The concept of 'energy' was very important and 20% defined 'health' in terms of having energy, which also carried connotations of vitality. Virtually everyone (99%) in the sample felt that diet was important in maintaining health and took care about what they ate (94%).

4.3 Benefits of being vegetarian

Health benefits

This effort was felt to be worthwhile since most people (67%) felt themselves to be in good health. This was associated with group (51% Ds, 61% LOs and 87% Vs), and curiously the Ds felt less certain about improvements in their health since changing their diet despite the fact that health had been one of their main reasons for becoming vegetarian as described in Chapter 3. Conversely, the majority of the Vs felt healthier even though few of them had cited it as the reason for adopting a vegan diet. There was no association with age or sex.

Table 19: 'Since becoming vegetarian, do you feel that your health has improved?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
yes	19	33	40	92
	(51.4)	(61.1)	(87.0)	(67.2)
no/not really	12	12	5	29
	(32.4)	(22.2)	(10.9)	(21.2)
can't tell	4	4	1	9
	(10.8)	(7.4)	(2.2)	(6.6)
DK	2	5		7
	(5.4)	(9.3)		(5.1)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

A wide variety of improvements were reported of which a reduction in the incidence of minor illnesses, particularly colds, was the most common (43%). This was the most specific and somatic improvement described. The others were more vague and qualitative such as 'having more energy/feeling less tired' (23%) and 'feeling less bloated/heavy' (10%). Again these feelings of 'health' often included emotional states, such as feeling more optimistic, more cheerful, more alert, less anxious and more positive. Some individuals reported quite dramatic changes and one man described how he used to be a 'night person' but now wakes up early feeling happy, cheerful and energetic, and how others have commented on his rejuvenated appearance. Another individual felt that she was now a nicer and more patient person. Some people described feeling 'freer' and more in control of their lives and body, and some felt that they were now more sensitive to, or in tune with, their body. A recurring theme was a sensation of feeling 'lighter', less 'heavy' or 'bloated', or less 'toxic'. These themes recurred later, particularly with regard to attitudes towards meat.

There were no significant inter-group differences, although less of the Ds reported a reduction in minor illnesses but more felt less heavy or bloated. Slightly more women reported improvements in their health but again it was not statistically significant, and there was no association with age.

Table 20: 'If yes, in what way?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
less/no illness	6 (30.0)	16 (48.5)	18 (45.0)	40 (43.0)
less heavy/ bloated	4 (20.0)	3 (9.1)	2 (5.0)	9 (9.7)
more energy	5 (25.0)	4 (12.1)	12 (30.0)	21 (22.6)
correct weight	1 (5.0)	1 (3.0)	2 (5.0)	4 (4.3)
feel cleaner	1 (5.0)	2 (6.1)	1 (2.5)	4 (4.3)
less anxiety	1 (5.0)	2 (6.1)		3 (3.2)
other	1 (5.0)	3 (9.1)	4 (10.0)	8 (8.6)
DK	1 (5.0)	2 (6.1)	1 (2.5)	4 (4.3)
TOTAL	20 (21.5)	33 (35.5)	40 (43.0)	93 (100.0)

The majority of those who reported an improvement in their health attributed it to their vegetarian diet (75% Ds, 77% LOs and 76% Vs).

Other benefits

In addition to health changes, subjects were also asked about other changes they might have experienced since becoming vegetarian; if they felt that it had affected their thinking, if their body felt cleaner, and an open-ended question of what benefits, if any, they personally derived from being vegetarian. These questions were asked to see if the benefits or advantages that people felt that they had gained from becoming vegetarian, if any, were only linked to somatic or physical changes or if they extended to more qualitative or even spiritual levels.

The majority of the sample (69%) felt that they were 'cleaner' in some way. Forty six per cent of those who felt a change described this as a sense of feeling pure, unpolluted or washed. One subject described this state as feeling 'as though you have just come out of the shower' and another said her body now felt like that of an infant's. This sense of purity was sometimes directly attributed to not eating meat, which was described as a polluting, putrefying, toxic and 'heavy' substance that lingers in the body. Purity appears to be linked to health and to the health improvements which some people described of feeling less 'toxic' and 'heavy'. Some people said they felt dirty inside not only if they ate meat (the Ds) but if they ate 'junk' or

processed foods, and 7% felt that a vegetarian diet had made their body more sensitive to 'junk' foods, drugs, alcohol, coffee, cigarettes, 'chemicals' or other 'pollutants'. This sense of cleanness was attributed to an improved bowel function by 20%, but this was often described as helping to purge pollutants from the body and preventing it getting 'clogged up'. One subject even had regular colonic irrigations to assist in this process. One person felt that their body odour had reduced, but for some people (16%) their sense of cleanness was purely mental or spiritual. The feeling of 'lightness' was often mentioned in association with purity and to connote a spiritual dimension in addition to the physical.

Table 21: 'Does your body feel cleaner now that you are vegetarian?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
Yes	25	35	35	95
	(67.6)	(64.8)	(76.1)	(69.3)
No	9	9	7	25
	(24.3)	(16.7)	(15.2)	(18.2)
DK	3	10	4	17
	(8.1)	(18.5)	(8.7)	(12.4)
Total	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

Table 22: 'If yes, in what way?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
feel pure/clean/ unpolluted	10 (40.0)	19 (52.8)	15 (42.9)	44 (45.8)
body more sensitive to drugs/junk food/pollutants	2 (8.0)	3 (8.3)	2 (5.7)	7 (7.3)
more aware body	1 (4.0)		3 (8.6)	4 (4.2)
less odour/ perspiration			1 (2.9)	1 (1.0)
better bowel habit	8 (32.0)	4 (11.1)	7 (20.0)	19 (19.8)
mental peace/ purity	3 (12.0)	7 (19.4)	5 (14.3)	15 (15.6)
other	1 (4.0)	3 (8.3)	2 (5.7)	6 (6.3)
Total	25 (26.0)	36 (37.5)	35 (36.5)	96 (100.0)

Many people thought that adopting a vegetarian diet had affected their thinking (75% overall, 68% D, 70% LO and 84% V). This perceived alteration took several forms. The predominant change was in attitudes (60% overall of those who felt a change) regarding areas relating to the politics and economics of food production (25%), ecological issues (5%), and the ethics surrounding the treatment of animals (14%), or a general attitudinal changes (17%). The second principal type of change (20%) was an improvement in actual mental function, and individuals described being more alert, having more mental acuity, that their meditation had improved, being 'less earthed', and one even said it was like being 'high' all the time. Again the theme of 'lightness' and of being 'lifted' by a vegetarian diet recurred. The third main change was in feeling gentler and more compassionate (13%). One V attributed this change in sensibility directly to diet - because veganism is a non-violent way of eating it causes a reaction in the mind which makes one less violent. Another, who now felt less aggressive and short-tempered, said how when she ate some fish a few years ago it made her very snappy and colleagues commented on it. The implication was that there is something in meat or fish which makes one aggressive or violent.

Table 23: 'Do you feel that a vegetarian diet affects your thinking?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
Yes	25 (67.6)	38 (70.4)	39 (84.8)	102 (74.5)
No	11 (29.7)	7 (13.0)	5 (10.9)	23 (16.8)
Can't tell	1 (2.7)	2 (3.7)	1 (2.2)	4 (2.9)
DK		7 (13.0)	1 (2.2)	8 (5.8)
Total	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 24: 'If yes, in what way?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
more aware of food	6 (24.0)	9 (23.7)	11 (27.5)	26 (25.2)
more aware of animals	2 (8.0)	7 (18.4)	5 (12.5)	14 (13.6)
more aware of ecology	1 (4.0)	2 (5.3)	2 (5.0)	5 (4.9)
general attitudes changed	5 (20.0)	5 (13.2)	7 (17.5)	17 (16.5)
think better	8 (32.0)	4 (10.5)	9 (22.5)	21 (20.4)
clearer conscience/ less guilt	1 (4.0)	3 (7.9)	2 (5.0)	6 (5.8)
gentler	2 (8.0)	7 (18.4)	4 (10.0)	13 (12.6)
other		1 (2.6)		1 (1.0)
Total	25 (24.3)	38 (36.9)	40 (38.8)	103 (100.0)

In the responses to both questions there was an implication of control at several levels; that a vegetarian diet puts one back in touch with both body and mind and allows closer communion between the two, it gives one better control over the body by not putting 'dirty' things into it, and it allows a broader sense of control over one's life. One V said that becoming vegetarian was itself an expression of self-will and a demonstration of taking control, and he now had a sense increased autonomy and confidence and felt his 'own man'. There was a link between the responses to these questions and the questions about health improvements expressed through the themes of 'lightness', 'purity' and 'control' all of which are enhanced by a vegetarian diet.

There were some inter-group differences in the value placed on health in the responses to the questions on personal benefits of being vegetarian. The two principal benefits cited were health (45% of all) and having a clearer conscience (28% of all). There were, however, differences between the groups: the same proportion of Vs gave health and conscience (39%), whereas the Ds and LOs cited health as the principal benefit that they derived from their diet (49% D and 46% LO) rather than conscience (11% D and 30% LO). A variety of other benefits were given (see Table 25 below) and the Vs tended to give more altruistic benefits, such as not contributing to animal suffering or feeling that they were contributing to making the world a better place. Conversely, more of the Ds were interested in benefits such as economy or preference.

Table 25: 'For you, what are the main benefits or virtues of a vegetarian diet?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
Health	18 (48.6)	25 (46.3)	18 (39.1)	61 (44.5)
Conscience	4 (10.8)	16 (29.6)	18 (39.1)	38 (27.7)
Feel clean/pure	1 (2.7)	1 (1.9)		2 (1.5)
In 'tune' with world/ helping improve	1 (2.7)	5 (9.3)	2 (4.3)	8 (5.8)
Prefer/enjoy	6 (16.2)	2 (3.7)		8 (5.8)
Economy	5 (13.5)		1 (2.2)	6 (4.4)
Independent of doctors			1 (2.2)	1 (1.7)
Not causing animal suffering	1 (2.7)	2 (3.7)	5 (10.9)	8 (5.8)
Less aggressive		1 (1.9)		1 (.7)
Other	1 (2.7)	2 (3.7)	1 (2.2)	4 (2.9)
Total	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

4.4 Concepts of dietary fibre

Dietary fibre (henceforth referred to as fibre) has had a high profile in the 1980s. It has been identified as one of the principal components of a 'healthy' diet as defined by the medical establishment (DHSS 1984; James 1983), and has also received attention from popular nutrition books such as 'The F-Plan' (Eyton 1982). Food packaging also often proclaims the

goodness of the food within because of its high fibre content. Despite this, there appears to be a certain amount of confusion on the part of the public about what fibre actually is and which foods contain fibre. In a study of nutrition awareness among the general population, Whichelow (1988) found not only confusion but a 'basic misunderstanding' of the term: many respondents believed that animal products, grilled fish and roast meat contained fibre. Whichelow attributed this partly to poor nutritional knowledge and to the interpretation of dietary fibre in a very literal way - that foods with a 'fibrous' appearance were believed to contain fibre. Schofield et al (1988) in a study of pregnant women also found that subjects had a rather unclear idea of the role of fibre in the diet and its reputed beneficial qualities.The subjects of this study were asked to define both what fibre is and what they think it does for them. In addition to providing insight into lay concepts of fibre, it was thought that this would provide a crude index of health knowledge. In response to the question 'What is fibre?', very few people gave correct definitions. Admittedly this is rather difficult and there is still disagreement among fibre researchers. The definition used to evaluate responses was a simplified version of Trowell's description of dietary fibre as plant material resistant to hydrolysis by human alimentary enzymes (Trowell 1976), which was taken here in simplified form as indigestible plant material. It was variously described by the subjects as roughage, bulk, cellulose, something indigestible and an essential nutrient. The largest category of response was the definition of fibre by its location in cereals, bran, fruits and vegetables and more specifically in their skins. There was no association with group, sex or age although the term 'roughage' was used slightly more by older people.

Table 26: 'What is fibre?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
bulk	5 (13.5)	2 (3.7)	3 (6.5)	10 (7.3)
roughage	9 (24.3)	10 (18.5)	11 (23.9)	30 (21.9)
cellulose	2 (5.4)	5 (9.3)	4 (8.7)	11 (8.0)
in cereals/bran/ skins	20 (54.1)	29 (53.7)	23 (50.0)	72 (52.6)
something the body needs	1 (2.7)	2 (3.7)	2 (4.3)	5 (3.6)
other		2 (3.7)	2 (4.3)	4 (2.9)
DK		4 (7.4)	1 (2.2)	5 (3.6)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

In the explanations of the function of fibre there was an apparent amalgam of 'truth', that is physiologically correct fact, and 'error'. The most frequent type of response (56%) was the description of fibre in very graphic terms as scrubbing, irritating or cleaning out the bowel in some way. Others saw it as bulking out or binding food to help it pass more smoothly through the system, and a small minority described it in more extreme terms as flushing out or soaking up toxins in food.

Table 27: 'What does it do?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
acts as bulk or binder or mixes the food	10 (27.0)	21 (38.9)	13 (28.3)	44 (32.1)
flushes out or soaks up toxins		1 (1.9)	2 (4.3)	3 (2.2)
scrubs/cleans/irritates the bowel	22 (59.5)	27 (50.0)	27 (58.7)	76 (55.5)
other	4 (10.8)	3 (5.6)	4 (8.7)	11 (8.0)
DK	1 (2.7)	2 (3.7)		3 (2.2)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Amongst a group of such well educated people, who could be expected to have fairly good understanding of nutrition, this reveals a rather low level of accurate knowledge. This should not, however, be interpreted as ignorance. These definitions of the substance and function of fibre reveal how this term has been appropriated by, and re-interpreted in terms of, the alternative discourse about health. In this discourse, as Coward (1989, p144) argues, shit and fibre "have taken on an altogether grander significance" than previously. Fibre has now acquired all the connotations of a 'good' and 'healthy' food, which helps to purge the body of toxins and contaminants and keep it pure and clean. 'Moral fibre' is now understood in a literal as well as a metaphoric sense as keeping the body pure and clean. These definitions of fibre also reveal the concern with bodily purity which is both literal and symbolic. This will be discussed in more depth in section 4.7.

4.5 Concepts of vitamins and use of dietary supplements

There is concern on the part of health professionals and the government about the excessive and largely unnecessary use of vitamin supplements in the UK. Studies in the US have shown a

higher usage of vitamin supplements among vegetarians than the general population (Read and Thomas 1983). To a superficial glance it would appear a *non sequitur* since vegetarians often proclaim the superiority of their diet, which would seem to contradict the use of vitamin supplements. To investigate how the vegetarians in this sample were thinking about vitamins and whether they used vitamin or any other dietary supplements, subjects were asked a series of questions: what they thought vitamins are, if they considered that they received an adequate supply from food alone, if they used any vitamin or other dietary supplements, the type of supplements used, and lastly if they felt that there was a difference between the vitamins which occur in food and those in tablet form. The questions were also designed as previously to provide a crude index of nutritional knowledge. The correct definition was taken as having 4 essential components: vitamins are food constituents, they are essential for health, they cannot be manufactured by the body, and the amounts needed by the human body are small.

Again the degree of 'correctness' or congruence with medical knowledge was low and only 6% gave a correct answer. Most of the other responses contained a part but not all of the correct definition. Vitamins, for instance, were described as essential nutrients, something the body cannot make, or substances which assist in various bodily functions. Definition by essentiality was the most frequent (33%). There was a marked absence of any notion of requirement - that vitamins are substances required in small and limited quantities. There was no association with group, age, sex, or level of education except that all those who gave correct answers were women.

Table 28: 'What is a vitamin?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
correct example given	1 (2.7)	3 (5.6)	4 (8.7)	8 (5.8)
both correct and incorrect example	2 (5.4)			2 (1.5)
essential to body	11 (29.7)	15 (27.8)	19 (41.3)	45 (32.8)
body can't make it			1 (2.2)	1 (.7)
natural nutrients/ chemical	2 (5.4)	2 (3.7)	2 (4.3)	6 (4.4)
helps growth/repair of body	4 (10.8)	9 (16.7)	3 (6.5)	16 (11.7)
acts as catalyst in metabolism in food	4 (10.8)	5 (9.3)		9 (6.6)
	7 (18.9)	9 (16.7)	5 (10.9)	21 (15.3)
prevents disease	1 (2.7)		4 (8.7)	5 (3.6)
contributes to right diet	2 (5.4)	2 (3.7)	4 (8.7)	8 (5.8)
helps form protein			1 (2.2)	1 (.7)
other		3 (5.6)		3 (2.2)
DK	3 (8.1)	6 (11.1)	3 (6.5)	12 (8.8)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

It was generally felt that there was a difference between the vitamins which occur 'naturally' in food and those in tablets. Slightly more of group V and more women (73% women, 58% men) considered that there was a difference, but not significantly so. The vitamins in food were held to be better, more natural (and by implication better), less concentrated, less refined, and better utilised in descending order than those in tablet form.

Table 29: 'Is there a difference between the vitamins which occur naturally in food and those in tablets?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
	No (%) in group			
yes	24	32	36	92
	(64.9)	(59.3)	(78.3)	(67.2)
no	7	11	4	22
	(18.9)	(20.4)	(8.7)	(16.1)
			1	1
			(2.2)	(.7)
DK	6	11	5	22
	(16.2)	(20.4)	(10.9)	(16.1)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

Table 30: 'If yes, what?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
	No (%) in group			
better in food	6	9	17	32
	(25.0)	(28.1)	(45.9)	(34.4)
natural in food	8	7	5	20
	(33.3)	(21.9)	(13.5)	(21.5)
organic in food	1			1
	(4.2)			(1.1)
less concentrated in food	4	5	1	10
	(16.7)	(15.6)	(2.7)	(10.8)
less refined in food		4	5	9
		(12.5)	(13.5)	(9.7)
better utilised in food	1	2	5	8
	(4.2)	(6.3)	(13.5)	(8.6)
not dried in food			1	1
			(2.7)	(1.1)
other	1	2	4	7
	(4.2)	(6.3)	(10.8)	(5.1)
DK	3	3		6
	(12.5)	(9.4)		(6.5)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

Only just over half of the sample (58%) considered that they received an adequate supply of vitamins from their diet. There was a slight association with group; more of the Vs (67%) and LOs (57%) felt confident about their diet than the Ds (49%), although a vegan diet is more likely to be lacking in certain micro-nutrients than the other two. Despite this, the use of vitamin supplements was high in the sample and 60% claimed to use some kind of vitamin supplement either regularly or sometimes. This would appear to be inconsistent behaviour but if seen in the light of subjects' definition of vitamins and the lack of any concept of requirement, and in the broader context of current attitudes about health and diet, it appears more rational. Vitamin use also expresses an anxiety about the quality of the contemporary food supply which will be discussed in the next chapter.

Table 31: 'Do you feel that you get all the vitamins you need from food alone?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
	No (%) in group			
yes	18 (48.6)	31 (57.4)	31 (67.4)	80 (58.4)
no	17 (45.9)	19 (35.2)	13 (28.3)	49 (35.8)
DK	2 (5.4)	4 (7.4)	2 (4.3)	8 (5.8)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 32: 'Do you use any vitamin supplements?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
	No (%) in group			
yes regularly	12 (32.4)	17 (31.5)	14 (30.4)	43 (31.4)
yes sometimes	14 (37.8)	11 (20.4)	14 (30.4)	39 (28.5)
used to	1 (2.7)	4 (7.4)	3 (6.5)	8 (5.8)
never	10 (27.0)	22 (40.7)	15 (32.6)	47 (34.3)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

There were no significant differences between the groups or by sex in the pattern of usage of either vitamin or other dietary supplements. The most popular type of vitamin supplement was a multivitamin preparation (taken by 27% of the whole sample, or 42% of those used a supplement), B vitamins (18% of all and 28% of vitamin users) and vitamin C (15% of all and 23% of users). Twenty eight per cent used more than one supplement and only 8% used more than two. Amongst those who used a variety of vitamin supplements the most popular were again multivitamin preparations, B complex vitamins, and vitamin C. There was no significant sex difference in vitamin use.

Table 33: 'If yes, what kind?' First response:

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
multivitamins	7 (26.9)	15 (46.9)	15 (32.6)	37 (41.6)
B vitamins	8 (30.8)	8 (25.0)	9 (29.0)	25 (28.1)
vitamin C	7 (26.9)	7 (21.9)	6 (19.4)	20 (22.5)
vitamin E		1 (3.1)	1 (3.2)	2 (2.2)
vitamin A	2 (7.7)	1 (3.1)		3 (3.4)
other	2 (7.7)			2 (2.2)
TOTAL	26 (29.2)	32 (36.0)	31 (34.8)	89 (100.0)

Second response:

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
multivitamins	3 (23.1)		2 (14.4)	5 (12.8)
B vitamins	1 (7.7)	5 (38.5)	7 (53.8)	13 (33.3)
vitamin C	5 (38.5)	5 (38.5)	4 (30.8)	14 (35.9)
vitamin D	3 (23.1)	1 (7.7)		4 (10.3)
vitamin E	1 (7.7)	2 (15.4)		3 (7.7)
TOTAL	13 (33.3)	13 (33.3)	13 (33.3)	39 (100.0)

Third response:

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
Multivitamins	2 (66.7)	1 (16.7)	1 (50.0)	4 (36.4)
vitamin C		2 (33.3)	1 (50.0)	3 (27.3)
vitamin E		2 (33.3)		2 (18.2)
vitamin A	1 (33.3)	1 (16.7)		2 (18.2)
Total	3 (27.3)	6 (54.5)	2 (18.2)	11 (100.0)

Use of other dietary supplements was also high; 22% took them regularly and 22% sometimes. Again there was no significant differentiation in terms of group or sex. Of the supplements used 24 were some kind of mineral, such as zinc, dolomite, selenium or a combination of several minerals, and the rest were a heterogeneous collection including among others mistletoe extract, ginseng, evening primrose oil, pollen, wheatgrass tablets, royal jelly and kelp. See Appendix 7 for a table of the different types of dietary supplement used.The use of vitamins and other dietary supplements has been attributed to a misplaced sense of dietary inadequacy (Read and Thomas 1983), but it is suggested here that it stems also from a concern about the quality of the food supply and the perception of vitamins as health promoting substances. Worsley et al (1987, p295) dismiss these as 'pseudoscientific beliefs' and consider vitamin and supplement use an example of 'food faddism' in that it "is dietary selection based on the unreasonable belief that a food or nutrient can solve problems quite distant from the nutrition domain". Indeed these beliefs are unreasonable and irrational within the biomedical paradigm, but such beliefs are not informed by the explanatory model of conventional Western medicine - like fibre, they have been incorporated into the new beliefs about the body and health. In his discussion of 'health foods', Atkinson (1980) shows how vitamins and other dietary supplements have acquired new meanings within the context of these cultural values. Vitamins are now promoted as life- and health-enhancing substances, they can help one cope with the stresses of modern living, make one beautiful and slim, and so forth. The promoters of vitamins often stress their 'naturalness' and 'purity' and, as Atkinson notes, it is often claimed that 'natural vitamins' are more powerful than 'synthetic' ones. Supplements such as ginseng often draw on their 'exotic provenance' which indicates that they are "uncontaminated with by association with Western 'civilisation'" (Atkinson 1980, p85). The significance in this shift of symbolism from the cultural and technological to the 'natural' will be discussed in the conclusion.

4.6 Attitudes towards, and use of, alternative medicine

The majority of the sample (70%) had tried at least one kind of alternative medicine and 58% used such remedies and treatments either regularly or sometimes. More of the Vs than the other 2 groups used alternative medicines regularly and also more women; 64% used some kind of alternative medicine either regularly or sometimes, as opposed to 50% of men. There was no association with age.

Table 34: 'Do you ever use any homoeopathic, natural, herbal or other alternative medicines?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
	No (%) in group			
regularly (now)	6 (16.2)	6 (11.1)	15 (32.6)	27 (19.7)
sometimes (now)	14 (37.8)	24 (44.4)	15 (32.6)	53 (38.7)
formerly	5 (13.5)	5 (9.3)	6 (13.0)	16 (11.7)
never	12 (32.4)	19 (35.2)	10 (21.7)	41 (29.9)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

A variety of therapies was used but the two most popular types were a homoeopathic remedy of some kind which, including tissue salts (homoeopathic in principle), constituted 55% of the different types used, and herbalism. Thirty nine per cent of people used more than one kind of alternative medicine, and 16% more than two types. Again, homoeopathic and herbal remedies were the most favoured.

Table 35: 'If yes, what kind?'

First response:

	No	%
homoeopathic	45	46.4
herbal	21	21.6
honey/vinegar	1	1.0
pure water	1	1.0
natural healing	1	1.0
naturopathy	1	1.0
acupuncture	6	6.2
Bach remedies	6	6.2
aromatherapy	3	3.1
osteopathy	1	1.0
tissue salt	8	8.2
faith healing	1	1.0
reflexology	1	1.0
other	1	1.0
Total	97	100.0

Second response:

	No	%
homoeopathic	9	17.0
herbal	15	28.3
natural healing	5	9.4
naturopathy	2	3.8
acupuncture	9	17.0
Bach remedies	2	3.8
aromatherapy	5	9.4
osteopathy	2	3.8
tissue salts	2	3.8
radionics	1	1.9
reflexology	1	1.9
Total	53	100

Third response:

	No	%
homoeopathic	5	22.7
herbal	5	22.7
honey/vinegar	2	9.1
acupuncture	2	9.1
Bach remedies	2	9.1
osteopathy	2	9.1
tissue salts	1	4.5
radionics	1	4.5
ayurvedic	1	4.5
hypotherapy	1	4.5
Total	22	100.0

When asked why alternative medicine was preferable to conventional Western medicine, subjects gave a large number of different reasons which fell into three broad categories: 1) hostility to conventional medicine and particularly drugs; 2) the superior healing power of alternative medicine; and 3) political and ethical criticisms of the pharmaceutical companies and animal testing of drugs. Modern drugs were seen as very threatening and were described as toxic, invasive, causing unwanted side-effects, powerful, mechanical in effect, addressing only the symptom not the underlying cause of illness, and not tailored to meet the needs of the individual. Implicit in these criticisms was an anxiety about taking something into the body which was perceived as dangerous, toxic and impersonal. Alternative forms of healing on the other hand were gentle, 'natural', 'let the body heal naturally without poisoning you', do not cause side-effects, take the 'whole person' into account, redress imbalances and restore harmony, and through aiding the body in its own natural healing processes leave the individual in control. Criticism of drug companies on ethical and political grounds was largely limited to group V.

Table 36: 'Why do you prefer it/them to conventional medicines?'
D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
N/A	8	15	4	27
	(21.6)	(27.8)	(8.7)	(19.7)
prefer a holistic approach	2	3	2	7
	(5.4)	(5.6)	(4.3)	(5.1)
no side effects	6	6	5	17
	(16.2)	(11.1)	(10.9)	(12.4)
no drugs	7	13	10	30
	(18.9)	(24.1)	(21.7)	(21.9)
individually planned	1	1	1	3
	(2.7)	(1.9)	(2.2)	(2.2)
no doctors	1	7	4	12
	(2.7)	(13.0)	(8.7)	(8.8)
natural healing	5	3	4	12
	(13.5)	(5.6)	(8.7)	(8.8)
it is effective	4	4	3	11
	(10.8)	(7.4)	(6.5)	(8.0)
no animal tests of medicines		1	7	8
		(1.9)	(15.2)	(5.8)
it's not just symptoms that are treated	1	1	4	6
	(2.7)	(1.9)	(8.7)	(4.4)
gentler action	1			1
	(2.7)			(.7)
not commercial			1	1
			(2.2)	(.7)
other			1	1
			(2.2)	(.7)
DK	1			1
	(2.7)			(.7)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

4.7 The quest for health and the perfectible body

Vegetarians thus possess a distinctive set of attitudes and beliefs regarding health and diet. There is an apparent conformity with 'healthy eating' recommendations as defined by the NACNE and COMA reports (DHSS 1984; James 1983), but, when the attitudes and beliefs of the vegetarians in this sample are explored in more depth, it can be see that they are more informed by the alternative health movement than by conventional Western medicine. As stated in the introduction to this chapter, this movement articulates a new philosophy of the body, health, nature, and the role of the individual, and provides a different set of symbolic categories through which physical states are ordered and experienced.

In this new philosophy health is viewed in a very positive and holistic way to incorporate not just physical but also spiritual and mental qualities. Health is greatly desired and has acquired almost religious connotations. Crawford (1984, pp62-63) discussing this shift in attitudes writes: in "disenchanted, secular, and materialist cultures, health acquires a greater symbolic significance. Health substitutes for salvation and becomes a salvation of its own". The status of the body has been similarly elevated; instead of being seen as essentially corruptible and degenerate flesh as in traditional Christian theology (in which fleshly desires and temptations were seen as things to be overcome and denied in the pursuit of a state of grace), the body is now regarded as essentially pure and perfectible. Bodily perfection and purity are central components of 'health'. This state of purity, however, is constantly threatened by contaminating influences, and modern urban living is seen as inimical to health. Nature and its forces are allies in the task of achieving health, and indeed the concept of 'health' is imbued with mystical overtones about communion and harmony with nature. In the task of achieving health, the onus of responsibility is firmly on the individual and a more fatalistic approach rejected. The quest for health requires active commitment and self-control, and there is a strong moral imperative attached to the pursuit of health. Ill health is almost seen as a sign of moral failure. The conspicuous pursuit of health is a sign of virtue, and the Protestant work ethic has been transformed into the health ethic; to be seen not to smoke, drink or overeat and instead to jog, be slim and healthy is a sign that one is morally virtuous and one of the elect. Health becomes a goal and a transcendental state in which self and life are transformed.

In regard to vegetarianism, many studies in the US have shown vegetarians subscribing to the alternative health movement (Cooper et al 1985; Dwyer et al 1974b; Freeland-Graves et al 1986b; Sims 1978). In the UK the study of Shickle et al (1989) found that although vegetarians did not rate their physical condition higher than their omnivorous counterparts, they held stronger opinions about diet and health and strongly disagreed with the notion that health is a matter of luck. Twigg in her study of vegetarian ideology identifies the status of the body and purity as central concerns, and that health has become a concept "imbued with religious awe" (Twigg 1979, p21) carrying connotations of purity, wholeness, and harmony with nature, which

offers a "this-worldly form of salvation in terms of the body" (Twigg 1979, p24). Vegetarianism presents a "risen, Blakean picture of the body, an immortal, youthful temple of the spirit" (Twigg 1979, p27).

This heightened sense of the importance of the body and the desire for health and purity were recurrent themes in subjects' responses regarding health and the role of diet in maintaining health. Many things were perceived to threaten this state of purity, such as 'chemicals' and 'junk' food, and others to preserve and enhance it such as fibre. This concern with bodily purity is largely symbolic: the body is being used as an arena for expressing wider concerns. Other prominent themes in relation to health are the concepts of wholeness, balance and harmony, nature and the natural. Like purity, these terms operate primarily at the symbolic level articulating abstract and moral values which contain an implicit critique of contemporary society. This will be discussed in more depth in the conclusion, but these themes re-surface in attitudes towards food and food production described in the next chapter.

CHAPTER 5: ATTITUDES TOWARDS FOOD AND FOOD PRODUCTION

5.1 Introduction

It was contended in the Introduction that dietary selection is not a purely biological process. Identifiable cultural preferences and cuisines cannot be satisfactorily explained in terms of biology, nutrition, availability, optimum use of resources or other material factors alone. It was argued that the qualities ascribed to foods within different cultural traditions are not derived solely from their nutritional attributes, but are to a large extent culturally defined and symbolic in content. These qualities are not random but are systematised in a food ideology which defines food versus non-food, organises the meanings attached to different foods, and prescribes the foods to be eaten on different occasions and by whom. Within the dominant English food ideology meat occupies a central and prestigious place, and vegetarians are exhibiting a form of dietary heresy or heterodoxy in rejecting meat. The food choices of vegetarians in the UK and USA have been found to be unorthodox in ways that extend beyond the avoidance of meat, in that they tend to be more experimental than their omnivorous counterparts, to use unusual foodstuffs, reject 'processed' foods, and not conform to conventional meal patterns (Anon 1980; Freeland-Graves et al 1980; Hardinge and Stare 1954; McKenzie 1971). Actual food use is not addressed in this chapter, but rather the way in which the vegetarians in this sample were thinking about food, and the symbolic imagery and values attached by them to different types of food. Key symbolic themes unify this imagery and symbolism which, as Twigg (1983) demonstrates, need to be interpreted in relation to the dominant practice of meat-eating.

Derision is usually cast upon the notion of an English cuisine, but using the term in the broad sense of a 'culturally differentiated cuisine' (Goody 1982, pvii) there exists a distinctive English cuisine and attached food ideology. These have changed greatly over the centuries and particularly in the nineteenth and twentieth centuries, but meat has always been a prized food with a pre-eminent place in the English diet. There has been a decline in the diversity of animals eaten as meat - hedgehogs, leverets and storks for instance are no longer common fare - but by the mediaeval period beef had emerged as the Englishman's favourite meat (Wilson 1976). By the early modern period, according to the historian Keith Thomas, "the roast beef of England was a national symbol" (Thomas 1984, p26), and foreigners saw the English as a race of avid meat-eaters (Wilson 1976). As Thomas describes, during this period "everyone's ideal was a heavy meat diet, since flesh, particularly beef, was, according to the doctors, 'of all food... most agreeable to the nature of man and breedeth most abundant nourishment to the body'" (Thomas 1984, p26).

Meat, and particularly red meat, was considered a food vital for maintaining health and strength, but it was also a stimulating food which could stir the passions. The poet Shelley is

said to have attributed some of the bloody excesses of the French Revolution to an over-consumption of meat (Whorton 1977). White meats like poultry were thought to be less stimulating and so a more appropriate food for the 'delicate', such as ladies and invalids. During nineteenth century debates over the diet served in the workhouses, some commentators thought that a diet containing meat was "too rich and exciting" for the inmates' lowly station, and one aristocrat considered that the effect of eliminating meat from the diet would be "altogether miraculous" (quoted in Drummond and Wilbraham 1958, p364). The work of nineteenth century scientists such as Magendie and Liebig gave support to the view that meat was the most essential component of the diet, essential not just for building up the body but for any physical exertion. This reinforced the symbolic attributes ascribed to meat of strength, power and vitality, and of stimulating the passions (particularly male). The diet recommended for Victorian athletes was underdone meat, and perhaps a little stale bread and no vegetables. The latter were considered by a Dr Parry, an influential Victorian physician, the invention of the Dutch or the devil (McLaughlin 1978).

English diet changed radically during the nineteenth century under the impact of population growth, urbanisation and industrialisation all of which had profound effects upon food production, preparation and consumption (Burnett 1989). Although regular meat consumption was largely confined to the affluent middle and upper classes during most of this period, meat remained the most valued food and meat consumption was still part of the national image: "in popular belief at least, John Bull was a meat-eater, not a potato-eater" (Burnett 1989, p11). Meat consumption was a indicator of social status, and within the changing meal patterns of English cuisine meat, fish and game continued to be the most prestigious dishes served to guests. It was only towards the end of the nineteenth century that meat consumption rose significantly among the urban working classes due to number of economic and infrastructural changes, such as improved communications and developments in food preservation and technology (Tames 1973; Thomas 1988). It has been estimated that average meat consumption rose from 96 lb a year in the mid-1880s to 111 lb in 1903-1913 (Burnett 1989). Meat consumption continued to rise in the first half of the twentieth century, but, despite expectations to the contrary, total meat consumption has only risen slightly since the second world war; average consumption per person per week was 30.49 oz in 1950 and 36.77 oz in 1985 (Burnett 1989).

Meat still occupies a central place in the English diet, both literally and symbolically, and its presence is the defining characteristic of a 'proper meal'. Charles and Kerr (1988) found in their study of food use in families in the North of England that a 'proper meal' is cooked and consists of meat with two accompanying vegetables. The Sunday roast is the 'proper meal par excellence'. Murcott (1983) also found that in South Wales the 'cooked dinner' was very

important, particularly on Sundays, and it comprised meat with vegetables. Meat, and particularly beef, remains a prestigious and desirable food. In a study of the influence of income on food choice, McKenzie (1980) found that the foods people in low income groups would buy more of, if they had the money, were meat and chicken. Meat is more than a prestige food item, however, and it still carries the symbolic qualities of strength, power, passion, virility, and aggression (Twigg 1983). These qualities are not evenly distributed between the different kinds of meat, and Twigg (1979; 1983) identifies a hierarchy of foods within English culture in which red meat occupies the apex as the most desirable and the most powerful, followed by the less 'strong' white meats of poultry and fish. Vegetables occupy the lowest rung in this scheme, and are not sufficient to form a 'proper meal' on their own but are merely considered adjuncts to meat. Beef remains part of the stereotyped national image - the French nickname for the English is still 'rosbif' (roast beef).The English diet has changed and is changing radically in ways other than meat consumption, and attitudes towards food have also shifted. Despite the claims of scientists that the food supply is safer than ever before, there has been increasing public anxiety throughout the 1980s regarding the quality of the national food supply. This is documented by the wealth of media attention directed at such issues, sensationalist books about the hazards of food additives, the vogue for 'health' foods, and the public alarm provoked by the salmonella and 'mad cow' food scares among others. The response to these, as Gofton (1990) points out, far exceeds the actual threat posed in terms of scientific evidence. Concurrent with these food panics, there has been a consumer-led movement away from highly processed food towards those foods that are perceived as 'healthy', 'natural' and 'whole'. In the packeting and marketing of food there is a heavy stress laid upon these qualities, and even white sugar is now advertised as being a 'natural' food by Tate and Lyle. 'Health foods' are no longer an exclusive category of special foods available only from specialist shops, but are now available in most of the large supermarket chains. There is also a nostalgic emphasis on 'traditional' methods of processing (such as stoneground flour made in a water driven mill), and 'traditional' recipes (such as Mrs Bridges' jams and preserves). Demand for organically grown fruit, vegetables, cereals and even meat has grown, and they are now stocked by many supermarket chains. The appeal of these foods does not reside in their superior nutritional qualities, since, as Bender (1979) has pointed out, these are usually minimal if they exist at all. The value of foods such as health food derives primarily from the symbolic imagery attached to them (Atkinson 1980).

Many of the anxieties and concerns implicit in these changes overlap with some of the issues raised in the last chapter and should be seen in their light. The emphasis on the importance of diet in the pursuit of health, the notion of the perfectible body and the desire for bodily purity in particular have important implications for what is considered appropriate to take into the body. As Coward (1989, p124) writes of health foods: "The symbolism surrounding health foods

encapsulates far more than a concern with nutrition or a critique of the social organisation of food production. Instead, the symbolism links to a new sense of the inner geography of the body and the significance of this body for society in general". Like health, food and eating have become increasingly moralised and linked to the notion of virtue (Atkinson 1983), and not only ill-health but forms of deviant behaviour such as criminality are being attributed to diet (Coward 1989). Eating white bread and sugar, like smoking and obesity, are labelled as indications of moral depravity and lack of self-control.

Subjects in the study were asked a series of questions about food ranging from general desirable qualities, preferences and avoidance, attitudes towards processing and different methods of food production to specific feelings about meat. Definitions were also sought of lay categories such as 'natural' and 'junk' foods.

5.2 General preferences and avoidances

When asked what general qualities they thought food should have, all subjects irrespective of group, age or sex showed a strong preference for food to be fresh and unprocessed. Rawness or freshness was the single most important criterion cited by 49% of the sample, and it implied food that had not been processed or prepared in any way. The second most important criterion was good taste or texture (20%). The remainder of responses were scattered but mostly referred to absence of processing and low additive content. Only one person gave value for money as a desirable quality of food.

Table 37: 'What qualities do you think food should have?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
no/low additive content	3 (8.1)	4 (7.4)		7 (5.1)
raw/fresh	20 (54.1)	24 (44.4)	23 (50.0)	67 (48.9)
organic	1 (2.7)	2 (3.7)	5 (10.9)	8 (5.8)
veganic			2 (4.3)	2 (1.5)
fibre-rich		1 (1.9)		1 (.7)
unprocessed	1 (2.7)	1 (1.9)	2 (4.3)	4 (2.9)
should look good	3 (8.1)	2 (3.7)		5 (3.6)
good taste/texture	5 (13.5)	12 (22.2)	11 (23.9)	28 (20.4)
clean/healthy	1 (2.7)			1 (.7)
fresh/simple			1 (2.2)	1 (.7)
nutritious	2 (5.4)	3 (5.6)	2 (4.3)	7 (5.1)
value for money		1 (1.9)		1 (.7)
filling	1 (2.7)			1 (.7)
high protein		1 (1.9)		1 (.7)
no preference		3 (5.6)		3 (2.2)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Most people (95%) reported avoiding certain kinds of food and these avoidances fell into 2 main categories: foods with a high additive (46%) or sugar/salt content (7%); some type of processed food (canned food 29% or any processed food 15%). A few people avoided foods for ethical or political reasons (2%). When asked the reason for these avoidances, most people referred to the detrimental effect of additives on health, or the inferior nutritional qualities of such food. The most favoured reason was that such foods are 'bad for you' in some unspecified way (32%). There was an evident anxiety about additives - that the amount present in food is unknown and that their effect on the body is also unknown. Throughout there was no association with group, age or sex.This aversion to 'processed' foods and preference for 'natural' and 'whole' foods is corroborated by McKenzie's study of vegans (1971) and also been observed in the US (Calkins 1979; Dwyer et al 1974b).

Table 38: 'Are there any kinds of food which you try avoid buying or eating?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
yes	36	49	45	130
	(97.3)	(90.7)	(97.8)	(94.9)
no	1	5	1	7
	(2.7)	(9.3)	(2.2)	(5.1)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

Table 39: 'If yes, what kind?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
contain additives	14	26	20	60
	(38.9)	(53.1)	(44.4)	(46.2)
processed food generally	6	6	8	20
	(16.7)	(12.2)	(17.8)	(15.4)
contain sugar/ salt	5		4	9
	(13.9)		(8.9)	(6.9)
canned food	11	15	11	37
	(30.6)	(30.6)	(24.4)	(28.5)
animal products			1	1
			(2.2)	(0.8)
South African		1	1	2
		(2.0)	(2.2)	(1.5)
other		1		1
		(2.0)		(0.8)
TOTAL	36	49	45	130
	(27.7)	(37.7)	(34.6)	(100.0)

Table 40: 'Why do you try to avoid them?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
bad for you	14	10	18	42
	(38.9)	(20.4)	(40.0)	(32.3)
unnatural		3	1	4
		(6.1)	(2.2)	(3.1)
unethical/inhuman		1		1
		(2.0)		(.8)
unnecessary	1	4	2	7
	(2.8)	(8.2)	(4.4)	(5.4)
resources are	1	4	4	9
harmed/destroyed	(2.8)	(8.2)	(8.9)	(6.9)
nutritionally	3	3	4	10
poor	(8.3)	(6.1)	(8.9)	(7.7)
dislike	10	9	5	24
	(27.8)	(18.4)	(11.1)	(18.5)
don't know	4	9	6	19
additive content	(11.1)	(18.4)	(13.3)	(14.6)
don't want	2	4	4	10
	(5.6)	(8.2)	(8.9)	(7.7)
political reason		1	1	2
		(2.0)	(2.2)	(1.5)
other	1	1		2
	(2.8)	(2.0)		(1.5)
TOTAL	36	49	45	130
	(27.7)	(37.7)	(34.6)	(100.0)

5.3 Food processing and additives

Food processing and additives were viewed with great cynicism and even hostility by the majority of people in the sample. When asked what effect food processing has on food, it was seen almost uniformly as having a negative effect and only one individual saw food processing in a favourable light as adding desirable qualities or helping to safeguard the quality of the food supply. Food processing was described in emotive terms as destroying vital nutrients, deadening or killing food, removing food from its natural state, and filling it instead with unnecessary artificial additives which 'poison the cells in our body'. Processing was thus perceived to have two main effects in terms of nutritional merit - the removal of desirable natural qualities and the addition of undesirable substances such as chemicals - which were both negative. There was also a sense that processing standardises food and removes its sacred natural qualities thus turning it into a profane and commercial product - as one respondent said it 'distorts food and makes it impure'.

Table 41: 'What do you think processing does to food?'

	D	L	V	TOTAL
		No (%) in group		
detrimental to quality	6 (16.2)	10 (18.5)	7 (15.2)	23 (16.8)
devitalizes/destroys/ denatures food	5 (13.5)	7 (13.0)	11 (23.9)	23 (16.8)
removes important nutrients/vitamins	9 (24.3)	14 (25.9)	9 (19.6)	32 (23.4)
adds unnecessary ingredients		1 (1.9)	2 (4.3)	3 (2.2)
makes standardised commercial product	4 (10.8)	6 (11.1)	3 (6.5)	13 (9.5)
helps preserve	8 (21.6)	7 (13.0)	5 (10.9)	20 (14.6)
alters generally	3 (8.1)	5 (9.3)	5 (10.9)	13 (9.5)
adds desirable qualities		1 (1.9)		1 (.7)
makes food convenient	1 (2.7)	3 (5.6)	2 (4.3)	6 (4.4)
makes no difference	1 (2.7)			1 (.7)
DK			2 (4.3)	2 (1.5)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Additives were similarly viewed with great distrust; 56% of the sample felt that they were put into food for purely commercial or cosmetic purposes, and 67% considered that they were totally unnecessary. People were also very suspicious and anxious about the effect which additives might have upon those who consume them; 95% felt that additives affect us somehow, either in some vague but detrimental way, or more precisely through causing hyperactivity or cancer. Mood changes were also ascribed to food additives and one woman felt that her boyfriend had become less 'nervy' since he had eaten less crisps and chocolate. Some individuals were also concerned that additives might accumulate in the body and have a long-term effect, or cause an imbalance of chemicals in the body. The fear of a toxic effect was explicitly stated by some people, for instance additives 'poison the cells in our body'. A few people felt that additives influenced freedom of choice by creating a misleading and contrived illusion of nutritional worth.

Table 42: 'Why are additives put in food?'

Reasons:	D	LO	V	TOTAL
		No (%) in group		
cosmetic	17 (45.9)	20 (37.0)	10 (21.7)	47 (34.3)
commercial	7 (18.9)	12 (22.2)	11 (23.9)	30 (21.9)
to preserve	13 (35.1)	21 (38.9)	25 (54.3)	59 (43.1)
DK		1 (1.9)		1 (.7)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 43: 'Are they necessary?'

	D	LO	V	TOTAL
		No (%) in group		
yes, all of them	1 (2.7)	1 (1.9)	1 (2.2)	3 (2.2)
yes, some of them	14 (37.8)	14 (25.9)	12 (26.1)	40 (29.2)
no, none of them	22 (59.5)	37 (68.5)	33 (71.7)	92 (67.2)
DK		2 (3.7)		2 (1.5)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 44: 'Can they affect us, the consumer, in any way?'

	D	LO	V	TOTAL
		No (%) in group		
yes	36 (97.3)	50 (92.6)	44 (95.7)	130 (94.9)
no		2 (3.7)	1 (2.2)	3 (2.2)
DK	1 (2.7)	2 (3.7)	1 (2.2)	4 (2.9)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 45: 'If yes, in what way?'

	D	LO	V	TOTAL
		No (%) in group		
bad for health	21	27	26	74
	(58.3)	(54.0)	(59.1)	(56.9)
unknown effect	2	6	3	11
	(5.6)	(12.0)	(6.8)	(8.5)
possible long term effect	3	7	7	17
	(8.3)	(14.0)	(15.9)	(13.1)
imbalance or accumulation of chemicals	4	6	2	12
	(11.1)	(12.0)	(4.5)	(9.2)
bad for digestion		1		1
		(2.0)		(0.8)
influence our food choice	4	1	3	8
	(11.1)	(2.0)	(6.8)	(6.2)
increase cost	1	1	1	3
	(2.8)	(2.0)	(2.3)	(2.3)
DK	1	1	2	4
	(2.8)	(2.0)	(4.5)	(3.1)
TOTAL	36	50	44	130
	(27.7)	(38.5)	(33.8)	(100.0)

Additives were thought to have a detrimental effect on food, and compromised its quality merely by their presence (42%), or more actively by interfering with nutrients such as vitamins by destroying (10%) or replacing them (4%), and by destroying the natural qualities of food (15%). So-called 'natural additives' were considered better by 59%, but few people were able to explain why. It seemed that the label 'natural' was sufficient to ensure superiority. In all of these responses there was no association with group, age or sex.

A persistent theme in these responses was the perception of additives as dangerous chemicals which contaminate and pollute the sacred vessel of the body, and which interfere with the 'natural' qualities of food. Additives and food processing are 'unnatural' and unhealthy, threatening the purity and integrity of the individual.

Table 46: 'Do they change the nutritional qualities of food in any way?'

	D	LO	V	TOTAL
		No (%) in group		
yes	27	31	33	91
	(73.0)	(57.4)	(71.7)	(66.4)
no	3	9	2	14
	(8.1)	(16.7)	(4.3)	(10.2)
DK	7	14	11	32
	(18.9)	(25.9)	(23.9)	(23.4)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

Table 47: 'If yes, in what way?'

	D	LO	V	TOTAL
		No (%) in group		
reduce quality	9 (33.3)	14 (43.8)	16 (48.5)	39 (42.4)
destroy natural qualities	4 (14.8)	7 (21.9)	3 (9.1)	14 (15.2)
destroys vitamins	3 (11.1)	5 (15.6)	1 (3.0)	9 (9.8)
increase salt/ sugar content	1 (3.7)		2 (6.1)	3 (3.3)
interfere with nutrients	5 (18.5)	2 (6.3)	9 (27.3)	16 (17.4)
replace vitamins	2 (7.4)		2 (6.1)	4 (4.3)
increase calorie content		1 (3.1)		1 (1.1)
DK	3 (11.1)	3 (9.4)		6 (6.5)
TOTAL	27 (29.3)	32 (34.8)	33 (35.9)	92 (100.0)

Table 48: 'Do you think there is any difference between natural and artificial additives?'

	D	LO	V	TOTAL
		No (%) in group		
yes	25 (67.6)	25 (46.3)	31 (67.4)	81 (59.1)
maybe	6 (16.2)	7 (13.0)	8 (17.4)	21 (15.3)
no	5 (13.5)	10 (18.5)	3 (6.5)	18 (13.1)
DK	1 (2.7)	12 (22.2)	4 (8.7)	17 (12.4)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

5.4 Farming methods

Subjects were briefly asked their opinions about different farming methods, namely organic and factory farming of livestock. Factory farming was described in very emotive terms as, for instance, appalling, barbaric, evil, abhorrent, and there was an almost complete consensus of opinion that it is a practice which should be banned. In addition to the immorality of factory farming in terms of animal treatment, there was also a sense expressed that it is unnatural and that the meat thereby produced has been subjected to the same contaminating industrial processing as other processed food. Contemporary meat, as will be seen in the next section, is, like processed food, full of dangerous chemicals and 'interfered' with.

Conversely, organic farming was seen in a very favourable light. Most people defined it by the absence of use of artificial chemical pesticides and fertilisers. These (pesticides and fertilisers) were considered to be destructive and polluting to the environment by virtually everyone. Only one person expressed no interest, and seven people felt that some were necessary. Organic farming was described as gentler, more natural, less manipulative and interfering, and the 'good old fashioned way' of growing things. Nearly everyone believed that produce grown organically was better (93%), the most common reasons being that it has a better taste and contains less or no chemicals. Organic products were seen as purer and closer to nature, and some people liked the lack of uniformity and the presence of blemishes taking them as indications that organic fruit and vegetables had not been 'artificially forced'. Organic farming and its products were thus perceived as detached from the negative effects of industrial processing and technology, free of man-made chemicals, and aligned with nature and partaking of its qualities. These qualities are primarily symbolic; as Bender (1979, p164) points out, there is no objective difference between 'ordinary' goods and organic ones, and the claims of nutritional superiority for organically grown produce are, according to Bender, "completely devoid of evidence". Despite the fact that farming is an intrinsically 'unnatural' process in that it is the human manipulation and exploitation of natural resources, 'organic' farming is seen as a more 'natural', less industrial and non-exploitative form of growing which works with nature rather than against it.

Table 49: 'Are organic foods better?'

	D	LO	V	TOTAL
	No (%) in group			
yes	33 (89.2)	50 (92.6)	45 (97.8)	128 (93.4)
no	2 (5.4)	2 (3.7)		4 (2.9)
DK	2 (5.4)	2 (3.7)	1 (2.2)	5 (3.6)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 50: 'What do you think about the effects of chemical fertilisers and pesticides on the environment?'

	D	LO	V	TOTAL
	No (%) in group			
no interest	1 (2.7)			1 (.7)
bad	10 (27.0)	14 (25.9)	10 (21.7)	34 (24.8)
cause for concern	6 (16.2)	8 (14.8)	11 (23.9)	25 (18.2)
long term damage	6 (16.2)	8 (14.8)	3 (6.5)	17 (12.4)
should be banned	1 (2.7)	4 (7.4)	1 (2.2)	6 (4.4)
polluting	2 (5.4)	8 (14.8)		10 (7.3)
some are needed	4 (10.8)	2 (3.7)	1 (2.2)	7 (5.1)
dangerous/ destructive	7 (18.9)	10 (18.5)	20 (43.5)	37 (27.0)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Table 51: 'Do you have any views on intensive 'factory' farming?'

	D	LO	V	TOTAL
	No (%) in group			
totally immoral	4 (10.8)	8 (14.8)	7 (15.2)	19 (13.9)
should ban	3 (8.1)	4 (7.4)	6 (13.0)	13 (9.5)
cruel to animals	7 (18.9)	8 (14.8)	10 (21.7)	25 (18.2)
unnatural	2 (5.4)			2 (1.5)
totally unnecessary	2 (5.4)	2 (3.7)	2 (4.3)	6 (4.4)
a necessary evil	3 (8.1)			3 (2.2)
disapprove generally	16 (43.2)	31 (57.4)	21 (45.7)	68 (49.6)
other		1 (1.9)		1 (.7)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

5.5 Meat and other animal foods

Subjects were asked a series of question about meat in general, different kinds of meat, fish, other edible animal species and, to provide a counterbalance, plants.

Meat

When asked if they still liked meat, only 26% of the sample said yes and 58% said that they now disliked it. This was associated with group; 38% of Ds no longer liked meat versus 65% of groups LO and V. Some of the latter two groups said they now found the mere idea of eating meat 'repulsive', 'revolting' and generally abhorrent. One said he would feel that he had 'defiled himself' if he should eat meat. These attitudes are hard to reconcile with Marvin Harris's assertion of 'meat-hunger', that humans have a innate liking for meat because it is such nutritious substance (Harris 1986). As Mennell (1985) points out, there are varying degrees of aversion to food with some being relatively neutral and others of a more affective nature evoking feelings of disgust and revulsion. For many of the people in this sample, meat had become a repugnant food and previous taste preferences had been reversed. This aversion to meat thus appears to be learnt and to involve strong ideational and affective factors as described by Fallon and Rozin (1983).

Nearly everyone (93%) considered that meat was harmful in some way. The reason given by most people was the presence in meat of harmful substances such as steroids, hormones, antibiotics, or stress products. These answers indicated that it was modern farming methods which were making meat unhealthy by filling it with chemicals, and some people suggested that organic or wild meat might be acceptable. The largest single category of response was the high fat content of meat (31%). The rest of the sample considered that meat is inherently bad because it is a heavy, rotting or putrefying substance which is not digested easily and lingers in the digestive system (for instance, meat 'lurks in the system putrefying' and 'blocks the intestines and makes the stools smell'). The fat in meat was also referred to as 'clogging up' the system. Only a couple of older people described meat as too 'acid'; the description of foods as acidic or alkaline appears to be a lost dimension to food classification. The physiological argument was also cited - that the human digestive tract is not designed for meat consumption. A few people felt that meat was bad on a more spiritual plane; that eating something which had been killed ('putting death into your body') can cause bad karma, cloud extra-sensory perception, and make people aggressive. One person made no distinction between human and animal flesh and considered eating meat to be cannibalistic.

Table 52: 'Is there anything about meat which is bad for you?'

	D	LO	V	TOTAL
		No (%) in group		
no	2	6	1	9
	(5.4)	(11.1)	(2.2)	(6.6)
fat/rich	13	17	12	42
	(35.1)	(31.5)	(26.1)	(30.7)
cholesterol	3	4	2	9
	(8.1)	(7.4)	(4.3)	(6.6)
carcinogens		2	2	4
		(3.7)	(4.3)	(2.9)
hormones	12	16	15	43
	(32.4)	(29.6)	(32.6)	(31.4)
stress products		1	1	2
		(1.9)	(2.2)	(1.5)
decayed	1	2	4	7
	(2.7)	(3.7)	(8.7)	(5.1)
makes people	1	1	4	6
aggressive/bestial	(2.7)	(1.9)	(8.7)	(4.4)
other	5	4	5	14
	(13.5)	(7.4)	(10.9)	(10.2)
DK		1		1
		(1.9)		(.7)
TOTAL	37	54	46	137
	(27.0)	(39.4)	(33.6)	(100.0)

Meat is thus associated not only with ill-health, but also with feelings of purity,pollution, and 'naturalness', and the vegetarian avoidance of meat is clearly not a denial of a food perceived as tasty and nutritious. As Twigg (1983) writes, this contrasts with medieval vegetarianism where the predominant ethos was one of abstinence and denial, and there was no notion of vegetable foods as superior to animal products. The attribution of superiority to a vegetable diet was part of the physiological argument for vegetarianism which was formulated during the eighteenth and nineteenth centuries in the UK and America (the two main centres of vegetarianism in the West) to buttress moral and religious reasons (Whorton 1977). This argument reversed the dominant medical opinion that meat was essential for strength and endurance, that it was more digestible, and that human physiology was designed to be carnivorous. The American health reformers, such as Graham and Alcott, maintained that humankind was 'naturally' meant to be herbivorous because the human body lacks the teeth, claws and short intestinal tract of a 'true' carnivore. Interestingly, as Whorton notes, the health reformers also drew on the dominant view of meat as a 'stimulating' food which they interpreted as a pathological effect. Meat was thus considered not only spiritually wicked, but physically unhealthy and unsuited to the human digestive system. Vegetables on the other hand had a "tendency to temper the passions" (Alcott 1840 quoted in Whorton 1977, p127) and provided superior and more digestible fare, so unifying Christian morality and physiology.

Regarding vegetable foods, subjects were asked briefly why it was acceptable to eat plants. The answers to this question implied that plants are categorically different from humans and other animals, which places them in a different moral sphere. The main difference attributed to plants was their lack of a nervous system and hence sentience and the ability to feel pain (39%). Secondly, they were described as lower in the food chain (13%), and some people expressed the view that plants were 'meant' to be eaten. A few, however, felt that it was only right to eat tree-crops (since the plant is not destroyed in harvesting its crops), and, although there was only one practising fruitarian in the sample, two of the vegans were contemplating becoming fruitarian. More of the Ds were 'not bothered' about any ethical questions surrounding plant consumption (24% Ds, 4% LOs and 2% Vs). On a more physiological level, it was felt that plants are not only the appropriate food for the human digestive system, but are 'good' food since they are alive and full of 'life-force' which is transferred to the consumer and will increase her/his life energy and aura.

Red versus white meat

Sixty three per cent said that there was a difference between red and white meat (poultry), which was significantly associated with group; 78% Ds, 70% LOs and 41% Vs. The principal difference given was the lower fat content of white meat (29% of all, or 47% of those who thought there is a difference). A variety of other differences were cited which referred either to the reduced presence of other noxious substances, such as cholesterol and carcinogens, or that white meat is intrinsically less bad or unhealthy. In the latter, a common perception was of white meat as 'lighter', easier to digest, and 'less heavy on the body'. Because white meat contains less chemicals/toxins and less blood, less polluting and more 'sanitary' than bloody red meat

Amongst the Ds who did not categorically abstain from any type of meat, white meat was more positively rated and only 14% still ate red meat whereas 32% still consumed white meat, all ate fish and 70% ate shellfish.

Table 53: 'Is there any difference between red and white meat?'

	D	LO	V	TOTAL
		No (%) in group		
yes	29 (78.4)	38 (70.4)	19 (41.3)	86 (62.8)
no	8 (21.6)	13 (24.1)	24 (52.2)	45 (32.8)
DK		3 (5.6)	3 (6.5)	6 (4.4)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

$X^2 : p < 0.005$

Table 54: 'If yes, what?'

	D	LO	V	TOTAL
		No (%) in group		
fatness	8 (27.6)	25 (65.8)	7 (36.8)	40 (46.5)
cholesterol content	3 (10.3)	4 (10.5)	1 (5.3)	8 (9.3)
carcinogens	2 (6.9)		1 (5.3)	3 (3.5)
white meat is healthier	5 (17.2)	1 (2.6)	7 (36.8)	13 (15.1)
white meat is less heavy	5 (17.2)	2 (5.3)		7 (8.1)
white meat comes from lower animals		1 (2.6)		1 (1.2)
white meat is from less aggressive animals		1 (2.6)	1 (5.3)	2 (2.3)
other	3 (10.3)	3 (7.9)	1 (5.3)	7 (8.1)
DK	3 (10.3)	1 (2.6)	1 (5.3)	5 (5.8)
TOTAL	29 (33.7)	38 (44.2)	19 (22.1)	86 (100.0)

Meat versus fish

The Ds who still ate fish but not meat had two main reasons. Firstly fish was considered healthier (39%) and better because it is not farmed (26%). They were perceived as a more natural food because they were not farmed, processed or 'tampered with' in any way. Fish were also therefore 'purer', 'lighter' and 'cleaner'. There was much less anxiety about eating fish than other forms of animal flesh, as one respondent said it 'is less repulsive than meat' and 'doesn't feel like a living animal'

The whole sample were asked if they thought fish differed from warm-blooded animals in any way. Roughly a quarter of the sample (27%) considered that there was a difference. There was a significant association with group, with more of the Ds thinking there was a difference; 49% Ds, 19% LOs and 20% Vs. Again, fish were seen as having a more natural life (24%), a less evolved nervous system (16%), less cognitive ability (14%), feeling less pain (14%), and different because they live in the sea (14%). Only two people referred to the fact they are cold-blooded.

Table 55: 'Are the lives of fish any different from those of animals?'

	D	LO	V	TOTAL
		No (%) in group		
yes	18 (48.6)	10 (18.5)	9 (19.6)	37 (27.0)
no	15 (40.5)	42 (77.8)	35 (76.1)	92 (67.2)
DK	4 (10.8)	2 (3.7)	2 (4.3)	8 (5.8)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

X^2 : $p < 0.005$

Table 56: 'If yes, in what way?'

	D	L	V	TOTAL
		No (%) in group		
fish feel less pain		3 (30.0)	2 (25.0)	5 (13.5)
have less cognitive ability	3 (15.8)		2 (25.0)	5 (13.5)
have a more natural life	3 (15.8)	4 (40.0)	2 (25.0)	9 (24.3)
are cold-blooded		2 (20.0)		2 (5.4)
have a less evolved nervous system	5 (26.3)	1 (10.0)		6 (16.2)
live in sea	4 (21.1)		1 (12.5)	5 (13.5)
other	2 (10.5)			2 (5.4)
DK	2 (10.5)		1 (12.5)	3 (8.1)
TOTAL	19 (51.4)	10 (27.0)	8 (21.6)	37 (100.0)

X^2 : $p = 0.001$

Classification of different animal species

It can be seen that the different types of animal flesh are hierarchically ordered; red meat is the most unhealthy and polluting and the least desirable as a foodstuff, followed by white meat and then fish. Significantly, this sense of hierarchy was strongest amongst the Ds. This hierarchy of flesh foods was also seen in Chapter 3 in the pattern of progressive exclusion which many people followed when implementing their decision to become vegetarian. Twigg (1983) identifies an inverse relationship between the degree of bloodiness of a particular type of meat and its relative purity based on the underlying symbolism of meat and more specifically blood.

Few people in this sample, however, made overt or explicit references to blood. The purity and naturalness of meat and other foods was seen to stem from the absence of chemical additives, lack of human 'tampering', the 'lightness' of food which could refer to colour of meat but was contrasted with 'heaviness' rather than darkness. The 'deadness' of meat was also a potent cause of aversion and was contrasted with the vitality and aliveness of plants. This vitality and life-force attributed to plant foods carried semi-mystical overtones.

To explore attitudes towards different animal species, subjects were asked to rank a series of edible species (a calf, sheep, snail, chicken, cod, pig and prawn) according to their ability to feel pain. The sample was divided into two groups; those who felt it could be done (68%), and those who adopted a more relativist and less anthropocentric stance saying that since the experience of pain is both relative and subjective it would be impossible to rank the pain suffered by other species (31% of all, 24% Ds, 37% LOs and 30% Vs). Some species were graded equally, but a ranking emerged in which mammals were consistently seen as the most sensitive, the chicken somewhere in the middle, and the cod, snail and prawn jockeyed for bottom position as the species least sensitive to pain; the pig was ranked first by 63%, the calf by 60%, the sheep by 58%, the chicken by 44%, the cod 31%, the snail by 29%, and the poor prawn by only 28%. Some individuals ranked all species as experiencing pain equally, and many more of these were Vs; the prawn was ranked last overall but 46% of Vs ranked it equally with the other animals versus 16% of Ds and 20% of LOs.

The ways in which animals are classified has attracted the attention of anthropologists (see for instance, Douglas 1957: Leach 1964; Lèvi-Strauss 1963a, 1972; Tambiah 1969). They have shown that the classification of the natural world, and more specifically animals, bears little if any relation to scientific taxonomies and can serve various social functions. Within the context of English culture, Thomas (1984) has shown how attitudes towards the natural world in England changed profoundly over the formative early modern period, and more recently Ritvo (1990) has scrutinised Victorian attitudes towards animals. She showed that the Victorian classification of animal species despite being more objective and systematic than medieval bestaries and organised according to structural affinities, was also a moral hierarchy which was used to corroborate claims of human superiority (and especially the superiority of white Europeans), express anxiety about social discipline, and to enforce the hierarchical social order. This operated by means of metaphor, metonym and synecdoche. Humans, or more specifically white upper class European males, were indisputably the highest and best form of being, but there was some disagreement over whether a dog or ape ranked second. This dispute continued even after the publication of Darwin's The Origin of Species in 1859. As Ritvo demonstrates, the egalitarianism suggested by Darwin and his covert attack on the myth of human superiority were largely ignored.

This notion of a 'great chain of being' descending from humans (a concept originally formulated by Thomas Aquinas in the thirteenth century based on Aristotelian philosophy) down through lesser creatures and so to lowly plants is still extant and was apparent in the responses described above, although with important differences between the groups. Edibility, appears to be, as Sahlins describes with reference to the American food system (Sahlins 1976, p175), "inversely related to humanity". This hierarchy of species is more than a ranking of difference, but also, as Ritvo demonstrates, a moral and highly anthropocentric ranking which relies upon on the myth of human supremacy. This will be discussed further in the conclusion.

5.6 What is a natural food?

Even a casual glance at the packaging and marketing of food items shows a constant and heavy emphasis on the 'natural' qualities of foods. There is now 'natural' yogurt, 'natural' white sugar, 'natural' additives, 'natural' peanut butter, 'natural' sweeteners, 'natural' breakfast cereals, 'natural' snacks and so forth. Manufacturers are very aware of the desirability of 'natural' qualities to the consumer, and nature and natural are used to market a vast and unrelated assortment of foods and other non-food items; there are now 'natural' shoes, 'natural' soap, and even Kenwood mixers have been promoted as 'natural'. It is evident that these words and what they signify are foci of intense contemporary interest, but given the vast range of contexts in which the words are used their meaning is not immediately apparent.

Due to concern at the potential misuse of the term 'natural', Her Majesty's Government commissioned a survey investigating its use in food labelling and presentation (MAFF 1987). The survey found that the term was used to make apparently conflicting claims but given the absence of any legal definition of the word it was difficult to assess the acceptability of use and so control misuse. Unfortunately, the survey failed to assess the "intended meanings and their likely interpretation by the consumer" of natural and its derivatives such as 'naturally best' primarily because of a rather circular approach in defining 'natural' as that which is made from 'natural' sources (MAFF 1987, pp2-3). Also like organic products, the power of the word 'natural' does not derive from literal qualities but from the symbolic meanings which it connotes.

In this study therefore the meaning of the word 'natural' and a series of other lay terms, such as 'naughty' and 'junk', were explored via the procedure described in Chapter 2.

Natural foods

Foods chosen as examples of 'natural' foods were predominantly fruit (42%) and vegetables (25%), occasionally with the rider that they should be grown organically (6%). Overall, 73% cited fruit and vegetables. A range of reasons were given for this choice in which there were consistent themes: that 'natural' foods are not processed, interfered or 'tampered with' by humans, they are untransformed and do not need to be transformed - they can be eaten as they are, raw. Natural foods also do not contain any chemicals or other additives and one can be sure that they only contain goodness. Another quality of 'natural' foods deriving from their lack of processing or adulteration is that they have not lost any of their 'life forces', aliveness or vitality. The other categories of 'natural' foods were: 'naturally' prepared products or products made from 'natural' ingredients such as wholemeal bread, honey and yogurt (14%); cereals/pulses/nuts (10%); free-range eggs (1%); 'wholefood' (1%); fish (1%). The first category ('naturally' transformed or made from 'natural' ingredients) cited above would appear to be a contradiction - a 'naturally' processed product when 'natural' implies absence of processing - but in terms of Levi Strauss' culinary triangle it could be seen as a 'natural' transformation and so dissociated from industrial food processing (Leach 1970; Levi Strauss 1963b). It is significant that the examples given by people fell into so few categories, with the category of fruit and vegetables easily predominating, which indicates a high degree of consensus regarding what constitutes a 'natural' food.

'Pure' foods were again predominantly fruit and vegetable products (fruit 26%, vegetables 23%), and some people explicitly stated that a 'pure' food was the same as a 'natural' one (22%). The other main categories of 'pure' were also similar; 'naturally' prepared products 14%, cereals/pulses/nuts 7%, and fresh fruit or vegetable juice 6%. Milk, eggs, sugar, water and fish were each cited by 1%. Purity stemmed primarily from lack of processing or 'tampering', and lack of chemicals. Lesser attributes of 'pure' foods were wholeness and rawness, but purity itself appeared to be a subsidiary quality of 'natural'. Fish was offered as an example of 'pure' food by two individuals because nothing had been added to it, and because it contained no blood.

The category of 'wild' foods evoked little interest and did not appear to be a very meaningful or significant term to the people in this urban sample, and this question had the highest non-response rate. Most people suggested a fruit of some kind (overall 47%). Within this category berries and particularly blackberries were most popular (44% and 27% respectively). The other foods were highly heterogeneous but could be broadly classified into herbs and other food plants such as chickweed (14%), mushrooms (11%) cereals and nuts (7%), and other vegetables (4%). The remaining examples given were honey (2), a free-range chicken (1) and a rabbit or a fish (1). These foods were seen to grow completely outside the jurisdiction of humans in the 'wild', but despite this were not attributed with any positive qualities unlike 'natural' foods.

'Nourishing foods' were again a very heterogeneous collection with no single type or category of items predominating: foods made from 'natural' ingredients or 'naturally' processed 21%; a mixed dish (for instance, a bean and vegetable stew or stir-fried vegetables and rice) 15%; soup 12%; vegetables 12%; cereals/pulses/nuts 12%; dairy products 5%; eggs and egg dishes 3%; fish 3%; sugar, Ribena, Complan, stout and meat 1% (1 person) each. The reasoning behind these choices relied mainly on concepts of diversity of nutrient content and balance. There was also reference to protein content, although the one person who chose meat referred to its high iron content rather than protein.

'Unnatural' foods

To provide a contrast, subjects were also asked to give examples of 'junk', 'naughty' and 'processed' foods, although people tended to give circular answers in explaining their choice of the latter.

The greatest range of items were given as examples of 'processed' food with cheese spread as the most frequent single item (14%) followed by tinned peas (13%), but when grouped together some kind of tinned food was the predominant category (27%). Apart from 'junk' food, this was the only category in which meat products were mentioned in any number; 15% mentioned some kind of processed meat product such as sausages, pork pies, turkey steaks, spam and bacon. Pot noodles and white bread were cited by 5% each, and 9% considered that any ready prepared meal was 'processed', and the rest of the items were only mentioned by one or two individuals. They included Angel Delight, ice cream, sugar, cornflakes, crisps, Coca Cola, TVP, blancmange, rice pudding, oven chips, Mars bars and so forth. As stated, most peoples' justification for their choice was circular but a few qualifications were added; that the goodness had been removed, it had been adulterated with chemicals, there was 'nothing in it' and 'depletes body energy'.

Again a large number of different foods were given as examples of 'junk' foods but for most people the maligned beefburger was synonymous with 'junk' food (60%). The only other items given by more than one or two people were crisps (9%), confectionery (8%), crisps and canned drinks (both 4%) and white bread (3%). The other examples were hard to categorise and included pot noodles, sausages, kebabs, Angel Delight, energy bars, Chinese take-aways, and McDonalds' milkshakes. The only common denominator was that all were 'processed' foods. As the name indicates, 'junk' foods were seen as literally rubbish food made from degraded ingredients ('reconstituted muck'), were over-processed, had a high fat and additive content, and were a thoroughly commercial product which lacks all true nourishment or goodness ('100% titillation'). There was some reference to the fact that 'junk' food is 'fast' and easily available. 'Junk' food is perhaps the epitome of 'processed' foods, a condensation of all that it bad.

A 'naughty' food was seen as either chocolate (32%) or cakes, and particularly cream cakes (28%). Like 'junk' foods, the other examples were hard to group into types but most were some type of processed or refined food, such as white sugar or flour, chips or crisps, ice cream, but there were also more 'natural' products such as peanut butter, cream and stilton. The notion of a 'naughty' food was primarily one of empty but enjoyable calories. They were bad because they contained lots of sugar and fat but little else, and although most were processed they did not carry quite the same pejorative connotations as 'junk' food. There was, however, an element of guilt and indulgence involved and, for some people, addiction. 'Naughty' foods were thus seen to undermine self-control and personal integrity, and some people related this to the ethical rather than the health or psychological sphere; one vegan cited coffee as 'naughty' because it is a cash crop, and another any food containing animal products.

Natural versus unnatural foods

In the responses regarding food and food production reported in this chapter there is a consistent opposition between the 'natural' qualities of food and the characteristics of 'processed' food. These fall into a series of binary oppositions á la Lévi Strauss:

<u>Natural foods</u>	<u>Unnatural/processed foods</u>
healthy	unhealthy
pure	impure/polluting
organic	chemical
not 'tampered with'	processed
alive	dead
light	heavy
authentic nutritional worth and goodness	artificial/false sense of nutrition/all cosmetic
plant foods (for Ds fish)	animal foods, particularly red meat
can be eaten raw	requires cooking
grown/prepared by 'natural' methods	made in factories
beneficent and gentle	dangerous to health and integrity
desirable	rubbish/'junk'
morally right	depraved

The word 'natural' provides the ultimate criterion of goodness, purity and nutritional worth. It also implies a food that is in a pristine state of nature and has not been processed or robbed of any of its beneficent qualities. Natural foods are primarily fruits and vegetables which have come to the table directly from nature in the category of food. Meat, on the other hand, is an unnatural, dead, farmed and processed food which has been pumped full of chemicals, pollutes the body, and is inimical to health. Meat also cannot be eaten raw but requires cooking. 'Junk' foods are the epitome of processed foods and "are associated with ideas of uncleanness and danger, especially from their additives, dyes, preservatives and other pollutants" (Helman 1985, p25).

This attribution of such glowingly positive qualities to vegetable foods and the relegation of flesh foods as unhealthy and polluting is, as Twigg has pointed out (1983) an inversion of the dominant English food ideology which was outlined briefly in the Introduction. In the vegetarian food ideology meat is relegated to the category of the inedible and unhealthy, and vegetable foods have been raised to the top of the food hierarchy as the most natural and healthy. This identification of nature and the natural with these desirable qualities is not inevitable and, as shall be discussed in more depth in the conclusion, the meaning and symbolic attributes of nature are historically and culturally variable. The concept of 'Nature' is an ideological and symbolic construct which has broad implications for humankind's self-image, concepts of human society and where it stands in relation to the natural world and animals.

CHAPTER 6: VEGETARIAN DIETS

6.1 Introduction

The findings presented in this chapter about nutrient intake and food use are based on the data collected in the weighed intake and food frequency interview described in Chapter 2. Some additional information regarding qualitative changes in food use, such as changes in meal structure, derives from the social interview. Whereas the sociological aspects of vegetarianism seem relatively neglected, there is an ever growing number of studies which address the dietary aspects and potential health benefits of vegetarianism. Most of these have focused on specific dietary components and their relationship with certain physiological variables, such as the link between fat intake and plasma cholesterol levels. Much of this work has been carried out in the USA where there are large vegetarian communities, such as the Seventh Day Adventists among whom large longitudinal studies have been carried out. It cannot be assumed, however, that the diet eaten by American vegetarians, in particular the Seventh Day Adventists who derive many aspects of their lifestyle including their vegetarian diet from their religion rather than vice versa, is analogous to that eaten by British vegetarians. The main findings of some of the British and more pertinent American studies are briefly discussed below.

In terms of general food use and patterns of consumption there is a lack of uniformity among vegetarians. The diets eaten by individual vegetarians are extremely varied and, as a group, they tend to be more experimental than their omnivorous counterparts. They depart from traditional or conventional eating habits not just in the exclusion of meat but in the structure of meals, and in the consumption of unusual foods such as tofu and other soya products, grains such as millet and buckwheat, and a wide variety of legumes (Anon. 1980; Bull and Barber 1984; Brown and Bergan 1975; Freeland-Graves et al 1980; Hardinge and Stare 1954). Both in the UK and the US vegetarians have been found to avoid processed and non-organic food (Dwyer et al 1973; McKenzie 1971)

When vegetarian diets are converted into nutrients, however, a distinctive pattern of intake does emerge. In terms of energy yielding constituents of the diet, vegetarians have been found to have lower protein and total fat intakes, and, more consistently, higher intakes of carbohydrate, fibre and polyunsaturated fatty acids, although there is disagreement regarding the amount by which they fall below or exceed the intakes of omnivores (Bull and Barber 1984; Burr et al 1981; Carlson et al 1985; Ellis and Mumford 1967; Reddy and Sanders 1990; Roshanai and Sanders 1984). Total energy intakes have not been found to be uniformly lower than those of omnivores, and some studies have found energy intakes to be higher (Reddy and Sanders 1990).

There is less consensus regarding the intake of micro-nutrients. Extrapolating from the National Food Survey, Bull and Barber (1984) deduced lower intakes of all nutrients except calcium, folate, and vitamin C which were higher than the national average. Other studies in the UK, however, have shown higher intakes of vitamin A, thiamin, iron, magnesium, potassium, zinc and a lower calcium intake, although they have confirmed the higher intakes of folate and vitamin C and reduced intakes of riboflavin, niacin, vitamins B12 and D compared to omnivores (Burr et al 1981; Carlson et al 1985; Ellis and Mumford 1967; Miller and Mumford 1972; Reddy and Sanders 1990; Sanders and Key 1987; Treuherz 1980). The variation in findings regarding calcium intakes disappears if discrimination is made between lacto-ovo and vegan diets; intake is similar or higher among lacto-ovo vegetarians than omnivores but lower among vegans (Carlson et al 1985; Ellis and Mumford 1967; Hardinge and Stare 1954; Sanders and Key 1987). Few workers have analysed the zinc content of vegetarian diets. In the UK Treuherz (1980) found a higher intake among vegetarian adolescents, in Sweden Abdulla et al (1981) found that vegans had a higher intake than omnivore controls, whereas in the US Freeland-Graves et al (1980) found a lower intake among vegans. This may reflect a differential use of zinc-rich foods such as whole grains and legumes.

From this review of the literature there appear to be certain fairly consistent trends in the pattern of nutrient intake of vegetarians which become more pronounced among vegans: as the amount of animal foods in the diet decreases, so intakes of total energy, protein, total fat, saturated fatty acids, calcium, zinc, riboflavin, B12, and vitamin D fall, and intakes of carbohydrate, fibre, linoleic acid, carotene, folate, thiamin, and vitamin C rise. Vegans, therefore, deviate most from omnivores in their dietary intake. This pattern is consistent with the analysis of dietary intake among American vegetarians (Hardinge and Stare 1954; Freeland-Graves et al 1980). Variations in findings regarding particular nutrients and the degree by which their intake differs from those of an omnivore may be a reflection of the diversity of vegetarian diets and the small sample sizes of most studies.

The Tables presented in sections 6.2 and 6.3 contain the analysis of the dietary intakes from round 1 only of the dietary survey, since there were no significant differences in nutrient intake between the two rounds. The Tables also include the contribution of dietary supplements to nutrient intake. The size and appropriateness of the contribution made by supplements is discussed in section 6.6. Although potential shortfalls in the diet are indicated, the question of the dietary adequacy of vegetarian diets is not discussed in depth.

6.2 Energy-yielding constituents and dietary fibre

The mean energy intakes of all groups were below the 1979 RDA (DHSS 1979) but were comparable to those of both omnivores and vegetarians recorded in recent surveys (Bingham

et al 1981; Bull and Barber 1984; Carlson et al 1985; Fehily et al 1984). The energy intake of the LOs and Vs was lower than that of the Ds, but the only significant differences were those between men and women within the same vegetarian group. This is not surprising and the RDAs reflect this sex difference. Protein intake also declined with increasing animal food avoidance, but again the differences were not significant. The lowest intakes of both protein and energy were those of the vegan females who also had the lowest mean reported body weights. All values of protein-energy percent were above 10 indicating an adequate proportion of dietary protein. The Vs had a lower mean alcohol intake but higher intakes of total carbohydrate and fibre. The latter was significantly higher but the mean dietary fibre intake of all groups were at or above the NACNE recommendations (James 1983).

Table 57: Daily intakes of energy, protein, carbohydrates and fibre, **including** the contribution of dietary supplements, by vegetarian group, sexes combined
Arithmetic means (standard deviations)

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

NUTRIENT	D	LO	V
Energy kcal	2066(636)	1961(507)	1968(630)
Energy MJ	8.61(2.58)	8.22(2.12)	8.15(2.59)
Protein g	67.1(23.5)	57.3(14.3)	55.3(21.9)
Total Carbohydrate g	238(81.8)	239(65.3)	265(81.4)
Starches g	131(41.5)	133(39.2)	151(66.7)
Sugar g	106(53.8)	106(39.3)	113(49.7)
Alcohol g	11.9(13.3)	12.3(19.3)	7.22(9.71)
Fibre g	31.5(12.6)	33.5(10.0)	39.7(13.4)
N	37	52	38

Significant between-group differences by Student's t-test ($p<.05$):
* between vegans and group indicated
+ between vegans and (D+L) combined

Total fat intake declined with lowered animal food consumption, but there were no significant inter-group differences and total fat contributed 34-39% of energy for all groups. All intakes were within or above the range recommended by COMA (DHSS 1984). There were significant differences with regard to the different types of fat consumed; the Vs ate significantly less saturated fat, less trans fatty acids, less cholesterol but more cis-N6-polyunsaturated fatty acids than the other two groups. These differences are a reflection of the degree of avoidance

of animal products and intakes of nuts and grains. The intake of unsaturated fatty acids of the Vs in this sample were similar to those found by Roshanai and Sanders (1984), although cis-mono unsaturated fatty acid intakes were about 10g less. In terms of current health recommendations, all groups exceeded the recommendations for PUFA and only the males in groups D and LO consumed more than the recommendation for SFA (DHSS 1984). The P:S ratios of all groups, and particularly the Vs, were high and above the COMA recommended level.

Table 58: Daily intake of fats, **including** the contribution of dietary supplements, by vegetarian group, sexes combined
Arithmetic means (standard deviations).

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = Vegan

NUTRIENT	D	LO	V
Total fat g	90.3(33.0)	82.1(27.0)	75.9(31.5)
Saturated fatty acids g	31.6(16.1) +*	27.4(10.8) *	16.8(7.60)
Unsaturated fatty acids:			
cis-mono g	26.1(10.6)	23.8(9.00)	23.1(10.6)
cis-N3-poly g	2.36(1.44) *	1.85(0.78)	1.72(0.86)
cis-N6-poly g	19.3(8.51) +*	18.7(7.66) *	25.4(12.9)
Trans fatty acids g	4.13(2.33) +*	4.01(2.64) *	2.73(2.23)
Cholesterol[1] mg	257(209)	192(145)	19(25.5)
N	37	52	38

Significant between-group differences by Students' t-test ($p < .05$):

* between vegans and group indicated
+ between vegans and (D+L) combined
[1] Cholesterol in vegan diets may be due to food table error which assumes that products such as biscuits etc are made with animal fats.

6.3 Micro-nutrients

Minerals

The pattern of mineral intake varied substantially between the groups. The Vs had lower mean intakes of calcium (statistically significant $P < 0.05$), zinc and iodine, and higher intakes of iron, copper and magnesium than the other 2 groups. The mean intake of magnesium was nearly double those of the other two groups, but the standard deviation was very high indicating a high degree of variation among the Vs. This probably reflects the variable intake of soya beans, which are a rich source of magnesium. The high intakes of iron among the Vs is attributable to a greater use of legumes and cereals. The high copper intake of the Vs, which were very skewed, was rather surprising. This may be an artefact generated by the food tables, and new data about to be published in a vegetable supplement to McCance and Widdowson suggests that the high value of 1.7 mg Cu/100 g tofu in the Immigrant Foods Supplement (Tan et al 1985) may be erroneous.

The zinc intakes of all groups were low and did not meet the RDA of 15mg/d. Although intakes of iron and calcium met the RDA, mineral:phytate ratios were not calculated so it is possible that the high fibre intakes implied less than average absorption of all three minerals.

Mineral status is hard to evaluate on the basis on the dietary intake of a specific nutrient alone because the absorption of minerals is affected by the form in which they occur, the competitive interaction between some minerals, and other components of the diet such as phytates which may compromise bioavailability. In brief, fibre, phytate, oxalate, tannin, fat, cholesterol and protein have all been shown to influence the absorption of certain minerals Freeland-Graves 1988; Kelsay et al 1988; Kies 1988; Zemel 1988). High levels of fibre, oxalate and phytate in the diet are negatively correlated with mineral absorption. Although some vegetarian women have been found to have unsatisfactory zinc status (Freeland-Graves et al 1980) and 'new' vegetarians especially women have been found to have low serum ferritin (Helman and Darton-Hill 1987), a study of the zinc and iron status of long-term vegetarian women showed it to be adequate despite their high intakes of fibre (Anderson et al 1981).

The nutrient density (intake per 1000kcals) of calcium and iodine was significantly lower in the vegan diets (calcium: Ds 451 mg/1000kcals, LOs 478, Vs 277; iodine Ds 93.8, 93.5 LOs and Vs 41.5). The nutrient density of the Vs diet was significantly higher than that of the Ds (8.45mg/1000kcals versus 6.94mg/1000kcals) and zinc slightly lower. There were significant sex differences in mineral density of the diet among the LOs and Vs; the diets of the LO women tended to have a higher mineral density (Mg, Fe, Cu, Zn), whereas the diets of the V women tended to have a lower mineral density (Mg, Zn, I). This may indicate different food choices, and have implications for the mineral intake of those whose total energy intake is low.

Table 59: Daily intakes of minerals, **including** the contribution of supplements, by vegetarian group, sexes combined.

Arithmetic means (standard deviations) with geometric means where appropriate (see text).

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

NUTRIENT	D	LO	V
Calcium mg	939(402)*	923(301)*	537(229)
Magnesium mg	402(141)	420(128)	729(386)
Iron mg	14.4(6.0)	15.1(5.55)	16.7(6.30)
Copper mg			
arithmetic	1.98(0.86)	1.99(0.80)	2.90(1.53)
geometric	1.71	1.78	2.36
Zinc mg	9.09(3.00)	8.99(2.40)	8.50(3.91)
Iodine mcg			
arithmetic	200(124)	182(66.6)	81.1(35.8)
geometric	159	162	71.8
N	37	52	38

Significant between-group differences in Round 1 by Student' t-test ($p < .05$):

* between vegans and group indicated
\+ between vegans and (D+L) combined

The iodine intake of the Vs was very low (only half the RDA) and reflects the absence of dairy products and fish in the diet. The importance of this low iodine intake among vegans is rather difficult to interpret because of several confounding factors. Firstly, the iodine content of plant foods is extremely variable depending on the location where they were grown and the geographical variation of the soil, and upon agricultural and industrial practices. Despite this, Wenlock and Buss (1982) found no evidence of significant variation in the iodine content of vegetables grown in the UK, although they did find that the iodine content of British cereal products was lower than that of the American because potassium bromate rather than potassium iodate is used as a flour improver in Britain. Also, although iodine in food occurs primarily as the iodide ion which is readily absorbed, some plant foods contain compounds which reduce the body's ability to utilise iodine; the goitrogens in brassicas, haemagglutinins in soya beans and polyphenols in peanuts (Hazell 1985). The lack of milk and dairy products (which provide 36% of total iodine intake in the average UK diet) in the vegan diet and the other factors described above point to a possible concern for the iodine intake of vegans in the UK, although this must be kept in perspective as there is no indication of increased prevalence of goitre amongst vegans.

Fat-soluble vitamins

Although not statistically significant, there were differences between the three groups in the mean intakes of the fat soluble vitamins. All groups had high carotene intakes (although there was a wide distribution within each group) from plant sources, but the Vs had a low intake of retinol which derived mostly from supplements (8%) and fortified margarine. Groups D and LO had adequate intakes of vitamin D (originating from milk, eggs and fish), but that of the Vs was low and did not meet the RDA. Most of their vitamin D came from supplements (c. 10%) and fortified margarine. The vitamin E intakes of all groups were high and particularly that of the Vs, which is attributable to a high consumption of whole grains and nuts, vegetable oils and, among the Ds, eggs. Again, the differences between the groups can be largely explained by the degree of exclusion of animal foods and the use of other food groups. This is discussed below in section 6.4.

Table 60: Daily intakes of fat-soluble vitamins, **including** the contribution of dietary supplements, by vegetarian group, sexes combined

Arithmetic means (standard deviations), with geometric means where appropriate (see text)

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

NUTRIENT	D	LO	V
Retinol mcg	536(304)	425(198)	176(134)
Carotene mg			
arithmetic	4.98(3.27)	5.60(4.56)	5.43(4.50)
geometric	3.89	4.00	3.98
Retinol equivalent mcg	1366	1358	1081
Vitamin D mcg			
arithmetic	3.10(2.06)	2.45(1.51)	1.72(1.40)
geometric	2.18	1.77	1.60
Vitamin E mg			
arithmetic	16.3(8.61)	16.0(8.63)	19.7(8.93)
geometric	13.7	13.5	16.5

Significant differences ($p < .05$) by Student's t-test

* between vegans and group indicated
\+ between vegans and (D+L) combined

No significant between-round differences (paired t-test)

Water-soluble vitamins

The mean intakes of all of the water soluble vitamins were skewed. The Vs had significantly lower intakes of riboflavin (due to the absence of dairy products in the diet) than the Ds, and Ds and LOs combined, and the mean intake including the contribution of supplements was below the RDA. They also had very low intakes of vitamin B12, which did not meet the recent suggestion that only 1.0 mcg per day is required (Bates 1987). Supplements contributed 34%

of the mean intake but some individuals (6/38) recorded a zero intake over the three survey days. Apart from supplements, the main dietary sources were cereal products and alcoholic drinks. Conversely, the Vs had the highest intake of thiamin (non-significant) deriving from their high consumption of legumes and cereals. Intakes of folate and ascorbic acid were high in all the groups with some very high intakes. Mean niacin intake was slightly higher among the Ds, which was probably due to their fish consumption which is a good source of niacin. There was no significant variation in vitamin B6 intakes between the groups..pa

Table 61: Daily intakes of water soluble vitamins, including the contribution of dietary supplements, by vegetarian group, sexes combined

Arithmetic means (standard deviations), with geometric means where appropriate (see text).

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

NUTRIENT	D	LO	V
Thiamin mg			
arithmetic	1.94(1.84)	1.67(0.50)	1.85(0.67)
geometric	1.57	1.55	1.66
Riboflavin mg			
arithmetic	1.92(1.71)	1.83(0.72)	1.16(0.45)
geometric	1.58 +*	1.70	1.07
Niacin mg			
arithmetic	31.3(10.2)	29.3(8.54)	28.6(10.71)
geometric	28.5	27.3	26.0
Vitamin B6 mcg			
arithmetic	2.39(1.76)	2.27(1.47)	2.75(0.94)
geometric	2.06	2.00	2.48
Vitamin B12 mcg			
arithmetic	3.51(3.10)	2.09(1.08)	0.64(1.05)
geometric	2.56	1.72	0.24
Total folic acid mcg	343(97.5)	358(95.9)	369(127)
Ascorbic acid	125(60.4)	127(64.2)	147(85.3)
N	37	52	38

Significant differences ($p < .05$) by Student's t-test
* between vegans and group indicated
+ between vegans and (D+L) combined
No significant between-round differences (paired t-test)

B12 deficiency is the hazard usually associated with vegan diets due to the absence of animal foods, but remarkably, despite a theoretically zero intake, vegans do not appear to suffer from clinical deficiency symptoms. Studies of their serum B12 and blood count values have shown them to be normal and they have a low incidence of macrocytic anaemia (Ellis and Mumford 1967; Gear et al 1980; Sanders et al 1978b).

The subject of B12 deficiency and vegan diets has provoked a certain amount of controversy. Immerman (1981), for instance, in a review of studies of B12 status among vegetarians, criticised their lack of rigor. He proposed several criteria which should be satisfied to diagnose B12 deficiency and to establish that the deficiency is due to dietary insufficiency and not other causes such as malabsorption. Few of the existing studies meet these standards, and hence Immerman considers that most of the cases of B12 deficiency which have been found among vegetarians cannot be simply attributed to dietary lack. The interesting question, according to Immerman, is why, contrary to scientific expectation, vegans usually have normal B12 status. Others, however, maintain that vegan diets can cause that B12 deficiency but that the high folate content of most vegan diets masks haematological disorders and vegans may suffer neurological damage in the absence of macrocytic anaemia (Dong and Scott 1982). Normal body stores of B12 are usually adequate to maintain normal serum levels for up to 5 years so there may also be a delay in the manifestation of symptoms, and Dong and Scott (1982) found a negative correlation between serum B12 levels and the number of years spent on the diet among those who did not use supplements.

It has been claimed that some plant-derived foods such as tempeh contain B12, but Herbert (1988) dismisses these claims saying that the chemical assay used to assess B12 content also measures non-active analogues of B12 and so yields false values. It has been suggested that there may be intake through accidental ingestion of insects but this does not seem very plausible (Sanders et al 1978a).

6.4 Food use patterns

Data is presented here from both the analysis of the weighed intake and the food frequency interview. Information from the former indicates the intake of the different food groups and their relative contribution to particular nutrient intakes. The data from the food frequency interview gives information about habitual patterns of food use outside the three survey days regarding the frequency of use of specific food items and the degree of variety within food groups such as the legumes.

Food sources of nutrients

In quantitative terms alone (g/day consumed), the predominant food groups were cereals, milk, its substitutes and products (this category includes soya milk), alcoholic drinks, and fruit in descending order. Cereals constituted an increasingly important food group as the degree of exclusion of animal foods increased both quantitatively and in terms of their contribution to nutrient intake. They were the only food group for which no individual recorded a zero intake on any of the survey days. The expected staples of a vegetarian diet, such as legumes and nuts, were eaten in much smaller quantities than cereals. Table 62 shows the mean intake of

the major food groups in round 1 of the 3-day weighed intake. No significant differences were detected in the follow-up.

It can also be seen from the table that the ranges of intake were very large and that there were some marked differences between the groups. The vegans, for instance, conformed far more to the stereotypical vegetarian diet in consuming more nuts, legumes, tofu, and cereals than the other two groups, especially the Ds, and significantly less confectionery and preserves.

When analysed in terms of percentage contribution to the intake of energy and other nutrients, the cereals again emerged as the most important food group for all groups (Tables 63-65). They provided the largest dietary source of energy, protein, fat, fibre, iron and zinc for all groups, and for vegans were the main source of calcium and riboflavin. Dairy products were an important nutrient source for the Ds and LOs; they ranked second as sources of energy, protein, fat and zinc, and first as sources of calcium, riboflavin, vitamin B12 and retinol. Fish only provided 3% of the Ds iron intake, but it made it made a more substantial contribution to their vitamin B12 intake - 39% of their intake and the largest single source. Tofu and special 'vegetarian' dishes did not make a significant contribution to the nutrient intake of any group. The other important food group with regard to minerals was 'other vegetables', which after cereals and dairy products also contributed to riboflavin and carotene intakes.

Table 62: Mean intakes (g/day), of major food groups, by vegetarian group, sexes combined
Mean (standard deviation), and range

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

FOOD GROUP	D	LO	V
Cereals	266(133)*	264(106)*	375(217)
	80-777	41-569	37-922
Potatoes	73.9(54.7)	81.9(79.9)	74.8(80.5)
	10-200	0-327	0-304
Lentils[1]	9.8(23.1)	17.5(46.7)	24.2(47.9)
	0-99	0-243	0-169
Beans[1]	41.2(62.5)*	58.0(75.1)	80.2(82.5)
	0-273	0-298	0-306
Tofu[1]	8.3(25.9)	8.5(19.7)	22.8(49.7)
	0-123	0-76	0-269
Salad	80(84.1)	81(73.2)	104(82.0)
	0-395	0-300	0-363
Other vegetables	145(83)	188(125)	183(150)
	1-315	0-544	0-700
Fruit	199(186)	210(152)	285(264)
	0-874	0-703	0-1198
Fruit juice	116(138)	101(197)	141(173)
	0-526	0-1314	0-788
Nuts	14.0(23.2)*+	11.0(19.3)*	24.0(30.8)
	0-116	0-109	0-121
Nut dishes	10.1(21.6)	7.6(25.0)	2.7(11.7)
	0-77	0-145	0-67
Vegetarian burgers	5.8(18.6)	7.3(21.7)	8.4(31.8)
	0-145	0-212	0-153
Other vegetarian dishes	5.8(18.6)	7.3(21.7)	8.4(31.8)
	0-91	0-101	0-184
Fats	17.3(11.1)	15.8(11.8)	14.1(14.6)
	0-42	0-46	0-58
Confectionery, preserves etc	32.5(28.5)+*	29.6(30.0)*	18.7(20.5)
	0-99	0-157	0-64
Milk, substitutes and products	211(168)+	217(127)*	146(175)
	0-747	0-532	0-645
Alcoholic drinks	212(280)	196(327)	121(191)
	0-989	0-1482	0-670
Eggs	31.6(47.3)	26.9(37.4)	0
	0-233	0-160	0
Fish	56.5(98.7)	0	0
	0-454	0	0
Meat	8.4(19.6)	0	0
	0-73	0	0
Dietary supplements	0.73(2.84)	0.46(1.87)	0.92(3.10)
	0-17	0-13	0-15
N	38	52	37

Significant between - group differences ($p < .05$):
* between group indicated, and V
+ between (D+L) combined and V
[1] includes dishes prepared from the food

Table 63:

Mean percentage contribution of selected food groups to Round 1 energy, protein, fat and fibre intake, by vegetarian group, sexes combined.

D=demi-vegetarian, L=lacto-ovo-vegetarian, V=vegan

FOOD GROUP	ENERGY (kcal)			PROTEIN (g)			TOTAL FAT (g)			PUFA (g)			FIBRE (g)		
	D	L	V	D	L	V	D	L	V	D	L	V	D	L	V
Cereals	32	34	40	29	33	42	19	22	26	17	18	22	44	42	41
Potatoes	4	4	3	2	3	2	2	2	1	5	4	1	5	4	4
Lentils[1]	0	0	1	1	2	2	0	1	1	1	1	1	1	1	2
Beans[1]	3	3	5	4	5	8	2	3	5	4	3	5	6	8	10
Tofu[1]	0	0	1	1	1	2	1	1	3	0	1	3	0	0	1
Other vegetables & salads	7	9	8	7	10	10	9	12	13	14	15	13	18	19	16
Fruit incl juice	7	7	11	2	3	5	1	1	4	0	0	1	15	16	18
Nuts[1]	6	4	8	6	4	8	6	5	9	11	9	17	16	13	18
Other vegetarian dishes	1	2	2	1	3	3	2	3	3	2	4	2	2	1	2
Fats & oils	6	5	5	0	0	0	15	15	15	19	20	19	0	0	0
Confectionery, preserves etc	6	6	4	0	2	1	5	5	4	0	3	2	2	2	2
Milk, substitutes and products	12	11	5	20	23	10	18	15	5	3	3	8	0	0	0
Eggs	3	3	0	5	5	0	5	5	0	3	3	0	0	0	0
Fish	4	0	0	14	0	0	5	0	0	5	0	0	0	0	0
Meat and products	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Dietary supplements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Intake	2066	1961	1968	67.1	59.3	55.3	90.3	82.1	76.0	21.7	20.6	27.1	31.5	33.5	39.7
N	38	52	37												

[1] includes dishes prepared from the food

Table 64:

Mean percentage contribution of major food groups to Round 1 intakes of selected vitamins, by vegetarian group, sexes combined.

D=demi-vegetarian, L=lacto-ovo-vegetarian, V=vegan

FOOD GROUP	RIBOFLAVIN (mg)			VITAMIN B12 (mg)			RETINOL (mcg)			CAROTENE (mcg)		
Cereals	21	23	30	7	10	23	13	14	16	1	1	1
Potatoes	0	1	1	0	1	0	0	0	0	0	0	0
Lentils[1]	0	3	1	0	1	0	0	1	2	2	0	1
Beans[1]	2	2	4	0	0	0	0	1	3	3	4	7
Tofu[1]	0	0	1	0	0	0	0	0	3	0	0	0
Other vegetables	9	12	18	1	3	1	3	7	8	75	73	74
Fruit including juice	4	5	11	0	0	0	0	0	0	4	4	9
Nuts[1]	2	2	4	0	0	0	0	1	0	1	0	0
Other vegetarian dishes	1	2	3	0	3	11	1	0	0	2	3	2
Fats	0	0	0	0	0	0	25	27	55	0	0	0
Confectionery preserves etc	1	2	1	0	0	1	0	0	0	0	0	0
Alcoholic drinks	3	2	2	4	4	10						
Milk, substitutes and products	23	25	2	28	43	8	30	29	0	1	1	0
Eggs	5	5	0	14	26	0	11	12	0	0	0	0
Fish	5	0	0	39	0	0	8	0	0	1	0	0
Meat	1	0	0	3	0	0	4	0	0	0	0	0
Supplements	16	5	6	1	4	34	2	2	8	0	0	0
Total intake	1.92	1.83	1.16	3.51	2.09	0.638	536	425	176	4982	5602	5432
N	38	52	37									

[1] includes dishes prepared from the food

Retinol from plant based food groups is derived from fortified magarine used in cooking.

Table 65: Mean percentage contribution of selected food groups to intakes of selected minerals, by vegetarian group, sexes combined

D = demi-vegetarian, LO = lacto-ovo-vegetarian V = vegan

FOOD GROUP	CALCIUM (mg)			IRON (g)			ZINC (g)		
	D	LO	V	D	LO	V	D	LO	V
Cereals	21	22	33	45	44	42	36	38	42
Potatoes	-	1	2	2	2	0	2	3	2
Lentil[1]	0	1	2	1	2	3	1	2	3
Bean[1]	2	3	7	4	5	7	3	3	7
Tofu[1]	0	0	0	0	1	2	1	2	2
Other vegetables	10	12	19	14	13	13	8	11	13
Fruit including juice	4	5	10	7	6	10	3	4	10
Nut[1]	2	21	3	4	3	6	8	6	6
Other vegetarian dishes	2	1	14	1	3	3	2	3	3
Fats	0	0	0	0	0	0	0	0	0
Confectionery, preserves etc	3	2	2	3	2	2	0	1	2
Milk, substitutes and products	41	40	3	2	1	1	19	17	1
Eggs	4	3	0	4	3	0	5	4	0
Fish	4	0	0	3	0	0	5	0	0
Meat	0	0	0	0	0	0	1	0	0
Supplements	0	0	2	2	2	2	0	1	2
All other									
Total	940	924	537	14.4	15.2	16.7	9.09	8.99	8.50
N	38	52	27						

[1] includes dishes prepared from the food

These data indicate that underlying the diversity of vegetarian diets and the wide range of items eaten, there is a uniform reliance upon one food group - the cereals. The importance of this food group as a nutrient source increases with the degree of exclusion of animal foods and dairy products. Within the category of cereals, however, a wide range of different types were being consumed. Food choices made within the different food groups, such as cereals and legumes, are discussed in the next section. Within each food group there was a variety of different items used, but nonetheless reliance on one food group does mean that if such a food group lacks a vital nutrient then there are fewer foods to compensate than in a more varied diet.

Food choices

This section summarises the information gathered with the food frequency interview. Information regarding portion size was also collected, but it must be stressed that where such data is presented it is based on **estimates** made by subjects and not on actual measurements. Some people had difficulty in estimating both the frequency of consumption and quantity of some food items and unclear responses were eliminated. Hence the discrepancy in numbers for some foods.

Cereals

As previously stated, cereals were very popular. There was a strong preference for 'whole' products such as brown rice and wholemeal flour. White flour, rice, wheat bran and germ, were not widely used. Wholemeal bread was the bread of usual consumption of all groups (77% never ate white bread). 'Speciality' breads appeared to represent a 'treat'. The Ds were most likely to eat other types of bread and the varieties most popular were granary, rye and pitta. Whole cereal grains were widely used and the frequency of use was significantly higher among the Vs (37% Vs used a cereal >once per day versus 17% Ds and 16% LOs). A variety of grains and cereal products (other than rice) were used including those not commonly consumed in Britain such as buckwheat and millet. The most popular were oats, couscous, bulgur wheat, barley, millet and buckwheat. The LOs ate the greatest variety (>7 different types), followed by the Vs ($\leq$ 5 varieties), and lastly the Ds ($\leq$ 4 varieties). In terms of quantity, however, the Vs were eating significantly more than the other two groups consuming a mean 540g/week (Ds 200g/week, LOs 257g/week). There was a preference in all groups for flours with a high extraction rate and for brown rice rather than white.

Nuts and legumes

The stereotypical image of vegetarian food is of stodgy bean stews and nut cutlets, filling and wholesome but rather heavy on the stomach and possibly with the embarrassing side-effects of flatulence. This image may not be so erroneous; only 7% of the sample used no whole grain legumes and only 9% used no nuts. The pattern of preference of legume types was similar in all three groups; red kidney beans, chick peas, lentils, and black-eyed beans were the four most popular varieties followed by haricot, butter and lima beans. Other types such as pinto and aduki beans were not greatly used. The Ds and LOs tended to use a slightly wider variety of different beans (64% Ds and 66% LOs used more than 3 types of legume versus 58% Vs), but the Vs used them significantly more frequently (20% ate legumes > 1/day, versus 0 % Ds and 1% LOs) and were eating significantly more (Vs mean reported intake of 629g/week, LOs 368g/week, and Ds 308g/week dry weight). Most people preferred to use dried rather than tinned pulses although baked beans were used by 5% of Ds and LOs and 4% Vs.

Nuts were widely used (only 3% Ds, 20% LOs and 10% Vs never used them). Peanuts and cashews were most popular followed by almonds, walnuts, Brazils and cob or hazelnuts. More exotic varieties such as tiger nuts or pecan nuts were only used by a small minority. There were no significant inter-group differences in the numbers of different types of nut used, and roughly half of each group used 3 or more types (56% Ds, 43% LOs and 55% Vs). The frequency of use was also similar in all 3 groups, and the majority were using them between once a day and once a week. Nuts were being used regularly in cooking by most people (~80%) and in a variety of ways; as the main ingredient (in a nut loaf or rissoles for example) or as an embellishment to a salad or dessert.

Nut and legume products were also used, principally derived from soya and peanuts. Whole peanuts and peanut butter were used but very few used whole soya beans. Crunchy peanut butter was the preferred type in all groups (only 12% used smooth peanut butter), and, although various brands were used, there was a preference for brands such as Whole Earth and Meridien rather than big-name brands such as Sun Pat. Other nut products were used by 25% of the sample and by slightly more LOs and Vs. The most used items were nut burgers and nut loaves, either bought ready-to-eat or as mixes.

There were large inter-group differences in the use of soya products; 50% Ds, 65% LOs, and 88% Vs used them regularly. The Vs also employed a much wider variety of soya products than the other two groups; 32% used 3 or more types versus 8% of both Ds and LOs. Tofu was easily the most popular item with all groups used by 28% Ds, 37% LOs and 63% Vs. This was followed by textured soya protein, tofu burgers, miso, and soy and other similar sauces (eg tamari) in descending order. 'Other' soya products such as tempeh and soya flour were little used. Soya cheese was used by 59% of Ds and 57% of LOs but no Vs. Soya milk was much used by the Vs (82%) presumably as a milk substitute but was less used by the other two groups (22% Ds, 25% LOs). Estimated weekly legume and nut intakes by groups D and LO were not particularly high, unlike group V. They consumed significantly more soya milk and other soya products than the other two groups. Estimated weekly intakes were: Ds 510g, LOs 667g and Vs 1720g of soya milk; Ds 114g, LOs 164g and Vs 430g of other soya products. In both case the standard deviations were very high indicating a wide range of intakes in all groups.

In summary, all groups made extensive use of legumes and nuts and products made from them. The Vs' use was the heaviest in terms of frequency and amount, if not the most varied.

Vegetables and salads

The use of vegetables was surprisingly conservative and the most popular vegetables and salad foods were tomatoes, lettuce, carrots, fruit vegetables such as courgettes and peppers, and celery in descending order, but 10-40% of the group did not eat any of these. Use frequencies were clustered around 1/week. 'Exotic' imported vegetables such as kohl rabi, sweet potatoes and so forth were little used, and salad items such as chicory and endive were not very popular. Round or loose lettuce and Iceberg were used the most by each group followed by Cos and Webbs' Wonder. Some very high intakes of raw carrots were reported; possibly they may been used for juicing. Other relatively high intakes were of lettuce, tomatoes, 'other' root vegetables (mainly beetroot and onions), mushrooms and Chinese leaves. Canned vegetables were eaten by hardly anyone. Frozen vegetables seemed slightly more acceptable, and 28% used frozen spinach.

Fruit

Fruit was the one category of food which was reportedly eaten more than once daily by up to a quarter of the sample. Apples and pears were eaten with the greatest overall frequency, followed by bananas and citrus fruits, and then 'exotic' fruits such as mangoes and kiwi fruit although these were not eaten daily unlike apples, pears and bananas. The quantities were highly variable. One individual in group V reported consumed 2979g/day in the weighed intake and reported weekly amounts ranging from 2500g to 5200g for different types of fruit. The median intake of most types of fruit was between 200-700g/week.

Fats and oils

Butter was the only animal fat used by 15% of Ds and 7% of LOs. The Vs used no animal fats. Soft polyunsaturated margarine was the most popular spreading fat (88% Ds, 89% LOs and 72% Vs) followed by low fat spreads such as 'Gold' (13% overall), soft not polyunsaturated margarine (7% overall), and yellow spreads (2% overall). For cooking, a number of different oils were used and many people used more than one. The two preferred oils were polyunsaturated vegetable oil, such as sunflower oil (used by 84% overall), and olive oil (47%). A small number used a blended vegetable oil (9%), butter (15% Ds, 7% LOs and no Vs), and solid vegetable fat (no Ds, 4% LOs and 10% Vs).

Dairy products and eggs

These were only used by groups D and LO, most of whom used either whole or semi-skimmed cows' milk daily or at least once a week. Whole milk was used daily by 35%, semi-skimmed by 21%, and skimmed by 8%. No one used sheep milk and only 1 subject used liquid goats' milk. Low fat yogurt was more popular and used more regularly than whole milk yogurt (low fat yogurt was used daily by 34%, whole by only 5%). Whole milk yogurt was used more on a

weekly basis (11%) as was goats' milk yogurt (9% weekly, 1% daily) and sheeps' milk yogurt (7% weekly, none daily).

No vegans ate cheese but amongst the other two groups only 3 (3%) did not eat it. Of the hard cheeses, the two most popular types were rennet-free 'vegetarian' cheese (43% LOs, 14% Ds) and ordinary cheddar (37% LOs, 50% Ds). Other hard cheeses, which were eaten by 28% LOs and 28% Ds, were a mixture of English and imported varieties. Brie was the most popular soft cheese eaten by 41% LOs and 53% Ds. Other types of soft cheese were only eaten by 14% LOs and 5% Ds. Goats' and sheeps' milk cheese were used by 15% and 13% of the sample respectively.

There was a clear preference for free-range eggs; 69% used free-range versus 23% using other eggs (Ds and LOs only).

Herbal drinks

These supposedly 'healthy' alternatives to coffee and tea were very popular and used by 50-60% of the sample. Frequency of use was mostly greater than once a week but only 29% used them daily. The most popular varieties were mint/peppermint, camomile, rosehip and mixed infusions. Only rosehip tea has nutrient connotations being a good source of vitamin C. Concern has been expressed regarding the unknown content of some teas, for instance comfrey tea is known to contain alkaloids and was used by 2%.

Iodine-containing foods (vegans only)

Because of the expected lack of iodine in the vegans' diet due to the avoidance of dairy products, an additional questionnaire was administered to group V only which enquired about their consumption of certain iodine-containing foods (sea salt, biosalt, Vecon, and seaweeds). About 40% used iodine-rich salt and 55% used some variety of seaweed. A surprisingly wide variety of seaweeds were eaten including Far Eastern varieties such as kombu, nori, wakame, and hiziki, as well as indigenous types such as kelp and laverbread. Sixty two per cent also used Vecon, a vegetarian yeast extract which contains an unspecified amount of seaweed powder, however this is unlikely to be an high iodine source. Only 5% of vegans did not use seaweed or Vecon, and used branded salt and so would rely upon vegetables and water for a dietary source of iodine.

6.5 Other dietary changes

As mentioned briefly in Chapter 3, when asked if they had changed the type of vegetarian diet followed in any way many individuals mentioned other qualitative changes. The main changes were increased variety and the consumption of foods not hitherto eaten, such as unusual grains and soya products, less 'junk' food, and more raw food.

Table 66: 'Have you always eaten the same kind of vegetarian diet that you eat now?'

	D	LO	V	TOTAL
N/A	17 (45.9)	23 (42.6)	24 (52.2)	64 (46.7)
more variety	10 (27.0)	16 (29.6)	8 (17.4)	34 (24.8)
avoid junk food	3 (8.1)	2 (3.7)	3 (6.5)	8 (5.8)
more raw food	2 (5.4)	1 (1.9)	5 (10.9)	8 (5.8)
'food combining' (Hay diet)	1 (2.7)		2 (4.3)	3 (2.2)
more organic food		2 (3.7)		2 (1.5)
less dairy products		10 (18.5)		10 (7.3)
now macrobiotic	1 (2.7)		1 (2.2)	2 (1.5)
more fruit			2 (4.3)	2 (1.5)
more convenience foods	3 (8.1)			3 (2.2)
other			1 (2.2)	1 (.7)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Many subjects reported that they had implemented these changes after they had been vegetarian for some time, and that initially they had used dairy products and proprietary vegetarian foods, such as Nuttolene and vegeburgers, as a meat substitute. With time, however, many subjects became more innovatory and adventurous using novel foodstuffs and breaking away from the 'meat and two veg' meal pattern. When subjects were asked to describe what for them was the difference between a 'snack' and a 'proper meal' a variety of definitions were given. The difference most commonly seen to distinguish between a 'snack' and 'proper meal' was size or amount only (47%), followed by lack of preparation (14%) and that a 'snack' just 'fills a gap' and is eaten between meals. Only 3% considered that a 'snack' was different because it did not contain a variety of components. There was a sense of experimentation and exploration in the use of food, and for many people this had brought an increased interest and enjoyment in food.

Table 67: 'What is the difference between a snack and a main meal?'

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	Total
		No (%) in group		
NR	1 (2.7)	2 (3.7)	3 (6.5)	6 (4.4)
Size/amount	16 (43.2)	28 (51.9)	20 (43.5)	64 (46.7)
less nutritious/ balanced	3 (8.1)	6 (11.1)	4 (8.7)	13 (9.5)
Don't sit down	2 (5.4)	1 (1.9)	1 (2.2)	4 (2.9)
Less preparation/ not cooked	7 (18.9)	5 (9.3)	7 (15.2)	19 (13.9)
Fills gap	5 (13.5)	4 (7.4)	10 (21.7)	19 (13.9)
Less variety	1 (2.7)	2 (3.7)	1 (2.2)	4 (2.9)
At no set time		5 (9.3)		5 (3.6)
Other	2 (5.4)	1 (1.9)		3 (2.2)
Total	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

6.6 Use of dietary supplements

Regular use of dietary supplements was lower than might have been presumed; on the 3 survey days 20% of Ds, 27% of LOs and 23% of Vs used supplements. Reported use of supplements was slightly higher (between 40-50% claimed to use them). Supplements contributed to nutrient intake but only to the intake of less than a quarter of the sample, and was significant only in relation to certain nutrients. Those nutrients to which they contributed more than 5% of mean intakes were iodine, B12, retinol, vitamin E, riboflavin and vitamin B6. The general use of supplements is summarised below:

Table 68: Summary of the contribution of supplements

*** mean intake below 90% RDA: supplements contribute >4.9% of intake**
iodine (Vs), vitamin D (Vs), riboflavin (Vs), vitamin B12 (V)

*** mean intake below 90% RDA: supplements contribute <5.0% of intake**
zinc (all groups)

*** mean intake above RDA: supplements contribute >4.9% of intake**
vitamin A (LOs and Vs), vitamin E (all groups), thiamin (Ds), riboflavin (Ds), vitamin B6 (Ds and LOs)

*** mean intake above 90% of RDA: supplements contribute <5% of intake**
calcium (all groups), iron (all groups), copper (all groups), iodine (Ds and LOs), vitamin A (Ds), vitamin D (Ds and LOs), thiamin (LOs and Vs), riboflavin (LOs), niacin (all groups), vitamin B6 (Vs), vitamin B12 (Ds and LOs, conservative RDA)

The supplements taken by the majority were multivitamins with or without iron, vitamin C, B complex vitamins and yeast. The usefulness of these supplements is questionable since the pattern of use did not coincide with the pattern of need. Vitamin C is not a need for vegetarians. Zinc, which was low in most diets, and vitamin D, which vegans may lack, were hardly taken at all. Vitamins A, E and B6 were not apparently lacking in the diet. Iron, which may be poorly absorbed because of the high phytate content of the diet, was only taken by about 25%. Only 18% of the vegans, who may need B12 supplementation, used a B complex supplement or yeast tablets which are likely to contain B12. They also had the lowest overall usage (in terms of both frequency and number of supplements used) of any group.

6.7 Comparison with omnivores

When compared with two groups of equivalent (young, southern, predominantly Caucasian) Cambridgeshire adults (C) studied by Bingham et al (1981) and the young UK adults (Y) studied by Bull (1988), the intakes of all groups within the sample differed from the omnivores' pattern of intake. The greatest differences were in intakes of ascorbic acid and dietary fibre which were higher in the vegetarians, and iron intake which was lower. Usage of the major food groups varied between the Cambridgeshire adults and the different vegetarian groups, especially the vegans. The Cambridgeshire adults had the same mean intake of cereals as the Ds and LOs, but a greater intake of animal products and a lower intake of vegetables and fruit and nuts. The Vs were eating more plant foods and cereals than all the other groups.

Table 69: Comparison of 'vegetarian' and omnivore dietary intakes (selected nutrients)

		This study			Cambridge All ages	UK 18-25[2]
		D	LO	V	C	Y
Energy Kcal	M	2358	2246	2201	2395	2485
	F	1908	1834	1758	1956	1675
Fat g	M	100	93	85	104	118
	F	85	77	67	90	81
Dietary fibre g	M	35	34	44	20	17
	F	30	33	36	20	12
Iron mg	M	7.2	7.0	8.9	13.0	11.5
	F	7.1	8.4	8.5	12.3	8.3
Riboflavin[1] mg	M	1.9	2.1	1.4	1.49	1.98
	F	1.9	1.7	1.0	1.67	1.33
Ascorbic acid mg	M	123	119	172	77	52
	F	126	131	124	76	46

[1] arithmetic mean
[2] many females dieting

When compared to a nationwide sample of adults (Gregory et al 1990) the pattern of difference between the nutrient intake of omnivores and the vegetarians in this sample is congruent with most of the studies described in the Introduction. The total energy intake of vegetarian men was lower than that of the nationwide sample, whereas that of women was slightly higher. The protein intakes of all groups and both sexes were below those of the nationwide sample, but the total carbohydrate intakes of all except the D men were higher. Fibre intakes were uniformly higher, especially among the Vs. The fat intake of the Ds and LOs was similar to the nationwide sample, but that of the Vs was lower and particularly amongst women. The Vs also had a significantly lower saturated fat intake. In terms of micro-nutrients, intakes of iron, zinc, magnesium, copper, folate, were similar or higher, intakes of carotene, vitamin E, vitamin C were markedly higher, and, intakes of retinol, the other B vitamins, vitamin D and B12 were lower. The Vs intake of the latter two was much lower than the national average, and, unlike the other two groups, they also had lower intakes of calcium, iodine and riboflavin.The vegetarians in this sample were thus found to have distinctive patterns of nutrient intake and food use which differ from those of omnivores. Many of the differences in nutrient intake are a predictable consequence of the exclusion of meat from the diet, and, among the Vs, the exclusion of dairy products and eggs. The Vs deviate most from the omnivorous pattern and the Ds least, with the LOs occupying the middle ground. Cereals were the food group which tended to replace animal products and they made the most important contribution to nutrient intake. The Vs made the most heavy use of cereals, and they also made extensive use of nuts, legumes and

soya products. Use of fruit and vegetables was surprisingly conservative, and there was a reliance on traditional items such as apples and pears, lettuce, tomatoes, onions and potatoes. Some proprietary vegetarian foods were used and these were principally derived from nuts and soya, but, in line with the attitudes regarding food in the last chapter, there was a preference for less processed foods, such as 'whole' unmilled cereals and fresh rather than tinned or frozen vegetables.

CHAPTER 7: CONCLUSIONS

7.1 "'Consumption' is the very arena in which culture is fought over and licked into shape" (Douglas and Isherwood 1980, p57)

The aim of this research, as stated in Chapter 1, was to interpret contemporary vegetarianism in the UK as an example of food choice using the cultural and symbolic framework of analysis developed by Douglas. Hence, rather than trying to explicate vegetarianism in terms of physiological mechanisms or any material advantage that might accrue to its adherents, the meanings and values which they attach to diet and health and which led them to become vegetarian have been examined. It has been shown that the motivation for adopting a vegetarian diet was complex and few cited purely material or pragmatic concerns; many of the benefits which subjects felt that they gained from being vegetarian were of an abstract or altruistic nature, for instance an increased sense of 'purity', having a clear conscience, or feeling that one is contributing to the improvement of the world. Data have been presented on subjects' attitudes and beliefs on a range of topics, such as concepts of health and its interaction with diet, animal versus vegetable foods and so forth, and it has been seen that vegetarians possess a distinctive set of attitudes and beliefs in which they are not informed by scientific or biomedical knowledge. Rather, notions of health and the role of diet in maintaining it were drawn from the alternative health movement, and in particular the latter's stress on the role of individual and the need for bodily purity in achieving health. Attitudes regarding food expressed concern about the state of the contemporary food supply and the detrimental effects of commercial food processing, and great virtue was attributed to 'pure' and 'natural' foods. The analysis of the dietary intake data also revealed a pattern of nutrient intake and food use which differs from British omnivores and also between the different types of vegetarian in the sample. The content of these attitudes is now examined in more for their "great symbolic force" (Douglas 1982, p123) and the relation between attitudes and actual dietary intake.

As stated in Chapter 1, rules of food use are social constructs which are culturally and historically variable. It is through approaching food and rules of food use as a "communicative resource, a language, which both expresses the main themes and values of the society and enables individuals to pursue their individual projects and purposes" (Gofton 1986, p131) that vegetarianism makes sense. This research leads to the conclusion that vegetarians are using their choice of a meatless diet as a concrete means of making a statement about the abstract beliefs and values to which they subscribe, and, rather than affirming the conventional values and world view of British society, they are rejecting them. The use of food in this way, however, needs to be seen in the context of contemporary British society, and, more specifically, the UK food system and changes therein.

Goody (1982) writes that the analysis of 'cuisines' should be set within the context of all the processes of production, preparation and consumption of food. Unlike pre-industrial societies, however, where these are usually closely linked and often carried out within a narrow set of related domestic groups (Goody 1982), in the UK, as in other post-industrial societies, the processes of food consumption and production have become almost totally divorced (Fischler 1980; Gofton 1990). Even the process of domestic food preparation appears to be on the decline as one of clearest trends in food consumption in recent years has been the rise in consumption of 'convenience' foods (Burnett 1989; Tames 1973; Thomas 1988). In an analysis of the food panics of the 1980s, such as the salmonella and BSE scares, Gofton (1990) considers that among other factors this alienation from the processes of food production has created food fears and anxieties which centre on the safety and acceptability of food, whereas in pre-industrial Britain food fears focused primarily on the problem of availability. Food availability is no longer a predicament and, as Mennell (1985) writes, consumers in Western countries are not only presented with a more plentiful food supply than ever before, but also a more varied one. He also identifies a "growing diversity of motivation" (Mennell 1985, p331) with people having the "opportunity for more varied experience in eating and to develop more varied tastes" (Mennell 1985, p321)

In addition, since the end of the second world war there have been a series of major social and demographic changes which have had profound effects upon eating patterns in the UK (Burnett 1989). Gofton (1990) has identified 3 principal categories of change which have altered the social structures which previously governed food consumption: 1) changes in social roles and relationships both within and outside the household, such as changing gender roles and the bases for personal identity; 2) changing household structure, such as the rise of the one-parent and single-person household; and 3) lifestyle and value changes, such as the growth of interest in ecology or 'green' issues, the rise of 'body culture', the trend towards convenience and fast foods. Coupled with new domestic technologies and consumer needs, Gofton argues that these changes have led to food usage within the contemporary household becoming a more flexible but less significant event, and that 'taste' is less strictly regulated than previously. He thus considers that food carries less symbolic weight than in the past when it was used to mark out the seasons, the day of the week, the time of the day, or the relationships between the various people sitting down to a meal together. It is argued here, however, that although food may not encode social events or relationships to the same extent, it still bears a heavy symbolic load but one that has shifted to expressing personal values and individual social identity. As Gofton himself writes, "Food is for the body of the individual rather than the table of the household these days" (Gofton 1990, p93).

This situation has been referred to as "gastro-anomy" (Fischler 1980, p948) implying that food and eating have become totally de-regulated and normless, but, although food selection is now a matter of individual rather than collective decision-making, this does not necessarily imply that it has become totally rule-less. Keil and Beardsworth (1991, p11) offer a more satisfactory term to describe the state of current UK eating practices - "menu pluralism". They use the term "menu" to refer to the underlying principles which guide food choice and which explain the continuity of most peoples' diets over time. In many cultures there is "menu differentiation", that is there are different types of food considered appropriate for different categories of person such as men and women, but this often occurs within the context of a "master menu". In complex modern societies, however, where food choice is not prescribed by social characteristics such as age or gender, the individual her/himself is able to define the principles of selection. Contemporary Britain is thus "menu pluralistic" in that there are various competing "menus" other than the "traditional menu" which may be chosen to guide food choice. Keil and Beardsworth's concepts of "menus" and "menu pluralism" supply a potentially very useful explanatory framework for understanding the range of eating practices currently extant in the UK, including vegetarianism, and are discussed further below.

It is suggested here that not only are vegetarians eating from a different menu, or even menus, but that they are also using food to make a symbolic statement in the manner described by Douglas and Isherwood (1980) and Gofton (1986). The vegetarian menu is based not only on particular notions of health and morality, but on an underlying 'hidden agenda' of ideas and values which are expressed through the symbolic qualities attributed to vegetable and animal foods. This 'hidden agenda' contains certain key concepts and symbols, such as nature and the natural, purity and wholeness, and the elevated status of the physical body. These are explored in more depth in sections 7.3 and 7.4, but first the history of vegetarianism in the UK is outlined since it is germane to the understanding of the vegetarian ideology as it exists in the UK today.

7.2 Historical context of British vegetarianism

Unfortunately, there is no specific history of the development of vegetarianism in the UK and this brief review has been drawn from: Barkas (1975); Hardinge and Crooks (1963); Mclaughlin (1978); Roe (1986); Thomas (1984); Whorton (1977). Where other sources have been used, they are indicated in the text.

Vegetarianism has a long history in Europe and the UK, and Pythagoras in the sixth century BC is often named as the founder of vegetarianism in the West. It is sometimes claimed that Socrates was also vegetarian, but this is disputed. There was a long tradition in classical Greece and Rome that humankind had originally been vegetarian in the mythical Golden Age,

and vegetarian movements in the classical world developed in what were perceived as times of gross excess, indulgence and moral decay. To prevent the further decline of civilisation, it was argued that humankind must return to the pristine Golden Age virtues of frugality, simplicity and vegetarianism. Other famous classical figures who, if not actually vegetarian themselves, upheld the virtues of a simple vegetable diet were Horace, Ovid and Virgil of Augustan Rome. Vegetarianism was also associated with a belief in the kinship between human beings and animals and metempsychosis or the transmigration of souls, which led to a stricture on the destruction of animal life. The virtues of a vegetarian diet were not undisputed, however, and Aristotle and the Stoic philosophers were the most famous opponents of vegetarianism in the ancient world.

In the early Christian era speculation about the origin and practice of flesh-eating continued, and the two most famous proponents of vegetarianism of this period were Plutarch of Chaironeia (46-120 AD) and Porphyry (223-304 AD). The latter wrote a long treatise "De abstinentia ab esu animalium" which argued the virtues of restraint and a simple fleshless diet. With the demise of the Roman Empire the interest in vegetarianism largely disappeared except in some of the ascetic orders of the mediaeval Catholic church; in the ninth century the Benedictine and Cistercian orders adopted the rule that their monks abstain from the flesh of four-footed animals and birds (it is interesting that 'flesh' foods did not then include fish). The Trappist order was formed from the Cistercians in the seventeenth century, and Trappist monks today still eat a strict vegetarian diet.

Apart from members of religious orders, during the mediaeval period in Britain vegetarianism was primarily confined to a few ascetic individuals for whom abstinence from eating flesh foods represented the triumph of the spirit over the body and carnal desires. Abstention from flesh foods in this period was thus seen essentially as a form of self-denial and there was no sense of the superior virtues of a vegetable diet. There was also no sense that it was ethically wrong to eat animals, and the prevailing theology held that there was a clear line of separation between humankind and the natural world over which God had given human beings dominion. Animals were considered to be the absolute antithesis of human beings, lacking souls, minds and feelings. They were thus outside the moral universe of human society with no rights and were therefore justly exploited by humankind. Attitudes were somewhat different on the Continent where animals were held to be morally responsible for their actions and were put on trial for their misdeeds. There was even a French greyhound, St Guinefort, who was canonised for being unjustly killed after saving a child from a snake. St Guinefort developed quite a cult following which was later suppressed by the Dominicans during the Inquisition. During this period the Cathars or Albigensians, a group of mediaeval heretics in Southern France who abstained from eating animal foods and preached a philosophy similar to that of Pythagoras,

were also savagely repressed. As Serpell (1986) writes, pet-keeping was considered to be a form of heresy, and bestiality was the most horrendous and unspeakable of sins, referred to in law books as *offensa cujus nominatio crimen est*.

The continental Renaissance was characterised by a re-emergence of interest in classical authors. This broke the dominating influence of catholic philosophy and particularly that of Aquinas who had been much influenced by Aristotle. There was a corresponding revival of interest in vegetarianism, and it is sometimes claimed that Leonardo da Vinci was a vegetarian (Barkas 1975). Hardinge and Crooks (1963) consider that this period marks the beginning of 'modern' vegetarianism, and they identify the emergence of several important arguments used henceforth to support vegetarianism: moderation in diet as propounded by Luigi Cornaro (1467-1566) in his famous treatise "Vita Sobria"; kindness to animals for humane reasons as suggested by Montaigne in the sixteenth century; the idea of the return to nature as extolled later by Rousseau and the Romantics in the eighteenth century; and the idealisation of the complete Pythagorean way of life which stressed moderation in all things and not just diet. Some of these ideas were drawn from classical writers, such as the stress on moderation and sobriety, but they were compounded by new arguments such as the notion of compassion towards animals for purely ethical reasons.

These views were not generalised, however, and were slow to reach England. The prevailing theology and world view remained extremely anthropocentric although after the Reformation there was a greater emphasis placed by theologians upon the Fall and humankind's fallen nature. With regard to meat-eating, many biblical commentators maintained that it was only after the Flood that humankind received a clear mandate from God to eat animal flesh and so became carnivorous. As described in Genesis, Adam and Eve had originally been vegetarian and lived in harmony with the birds and the beasts, but after the Flood the "fear and the dread" of humans was upon animals. There was disagreement as to why meat-eating was permitted by God but there was a consensus that "meat-eating symbolised man's fallen condition" and "the permission to eat meat was regarded as a concession to human weakness, not a command" (Thomas 1984, p289).

Although there was a later shift in theological views which stressed the perfection of God's design rather than the decaying state of the world, this led to the argument that there was no disharmony between human interests and those of subordinate creation. Domestication, it was argued, was good for animals and to kill them for meat was in fact a kindness not an act of cruelty. It was thus not until the mid-seventeenth century that individuals emerged in England who renounced meat for the ethical reason that it was wrong to kill animals for food. This has been attributed by Thomas (1984) to the disintegration of the old anthropocentric world view

which led to a questioning of human uniqueness and the nature of the difference between human beings and animals. This had consequences for both sides of the equation; the conception of humanity and its place in the natural world, and the conception of animals and their attributes - were they just mere automata as Descartes asserted, or did they have minds and/or souls and hence moral rights? The subject provoked passionate and heated debates and the complacency of the previous century regarding humankind's moral and spiritual superiority over animals and the rest of the natural world was seriously eroded. By the end of the century humankind's right to kill animals for food was widely discussed, and by the beginning of the eighteenth century a strong movement had developed. All the arguments used today to promote vegetarianism were then articulated; ethics, health, the view that meat-eating is physiologically unnatural and has a brutalising effect on human nature, cruelty, and even economic arguments that stockbreeding is wasteful in comparison to arable farming. From about the middle of the eighteenth century there was a growing number of publications in England which advocated the humane treatment of animals and an increasing questioning of the nature of human responsibility towards animals.

The vegetarian sensibility has always primarily been the product of an urban, and latterly industrialised environment, and at the end of the eighteenth and start of the nineteenth century it was linked with the Romantic movement and had marked radical and millenarian overtones. The poet Shelley was an ardent vegetarian and wrote a pamphlet "In Vindication of a Natural Diet". Vegetarianism has even been identified as a theme in the novel "Frankenstein" by his wife Mary Shelley (Adams 1990). The Romantics articulated a highly idealised image of nature, which was central to their arguments for vegetarianism. This is described in more depth in section 7.3, but in brief, nature was envisaged as beneficent, spiritually uplifting, having its own moral force, and potentially redemptive in a corrupted and decadent world. This pantheistic image of nature contrasted sharply with the contemporary reality of rapidly expanding cities, urban squalor and industrialisation.

During the nineteenth century vegetarianism lost some of its revolutionary fervour and impulsion. It became associated with non-conformist Christian groups, and in 1809 the members of the Bible Christian Church under the leadership of William Cowcross vowed to abstain from alcoholic drinks and flesh foods. Vegetarianism received formal institutional expression and organisation when The Bible Christian Church later founded The Vegetarian Society as a separate organisation in 1847. This was also the occasion of the coining of the term 'vegetarian'; hitherto vegetarians had been called Pythagoreans. Although the society had only five thousand members fifty years later and vegetarianism was generally considered a rather outlandish and strange practice which was much pilloried in newspapers and magazines such as Punch, it remained a challenge to conventional dietary practice. It also became linked

to various dissenting and non-conformist groups such as political radicals, feminists, pacifists, the temperance movement, the Theosophists and other religious non-conformists, and the anti-vivisection movement (Royle 1971). According to Roe (1986, p1361), during the 1850s "vegetarianism became a symbol of many reform movements related to social justice and health". There have also been vegetarian movements in other Western countries, notably the United States and Germany, although Hitler disbanded the German vegetarian society despite being a vegetarian himself. The American vegetarian movement was closely allied with the British movement during the nineteenth century, and in both the UK and the USA vegetarianism has enjoyed a great resurgence of interest in the 1980s.

It can be seen that from its beginnings vegetarianism has expressed a range of abstract and philosophical concerns about matters such as original sin, morality, purity, and the relationship between humankind and the rest of the natural world. In Thomas's view (1984), these issues and concerns that came to prominence in the early modern period generated a new sensibility and one which was in conflict with the material foundations of human society. He further considers that this conflict has not been fully resolved, only evaded, and that "it can be relied upon to recur" (Thomas 1984, p303). Indeed, the issues which Thomas identifies can be seen re-emerging in contemporary debates about the use of natural resources, animal experimentation, the fur trade and so forth, and in the rise in popularity of vegetarian diets. Now, as then, the two sides of these debates rely upon contrasting notions of nature, animals and the rights and duties of human society regarding these. These are now discussed.

7.3 Vegetarianism as a 'natural' diet

The words 'nature' and the 'natural' were constantly recurring themes in subjects' responses to a wide range of questions, from health and diet to food processing and the lives of fish. In Chapter 5 it was seen that 'natural' carried very specific connotations of those things that are whole, pure, untransformed, that have come to us directly from nature, and are good and greatly valued. Natural things stand in opposition to 'processed' foods, which are 'tampered with', 'unhealthy', full of chemicals, polluting, profane and bad. Naturalness provides a guarantee of goodness, and perhaps more than that - purity, wholeness and redemption - and the idea of a vegetarian diet as a natural diet is an essential component of its appeal. It is a word which needs 'unpacking', however, since neither the meanings and qualities attributed to nature and the natural, nor the manner in which they are used, are as straight-forward or unproblematic as they appear.

The word 'nature' is generally employed as though its meaning were straight-forward, inevitable and value-free, its reference to some objective, authentic and irrefutable 'given'. To describe an object or attribute as 'natural' effectively removes it from the sphere of debate. The

use of the words 'nature' and 'natural' in this way occurs both in the everyday usage of language, as by the subjects in this study, and within academic disciplines. Lévi-Strauss, for instance, takes nature and its opposition to culture as a primordial and universal given, and it is from this premise and the paradox (to him) that human beings belong to both the realms of nature and culture that he interpreted the role of cooking as a symbolic resolution between the two. His assertion that the nature:culture divide is universal has been widely questioned (see for example, MacCormack and Strathern 1980), and it ignores the fact that 'nature' is a concept whose meanings and symbolic connotations are culturally and historically contingent. Different cultures have very different conceptions of the natural and the relationship between the 'natural' and human society, and in some societies 'nature' is seen as polluting rather than purifying. Within the context of the Western intellectual tradition, however, the distinction between 'nature' and 'culture' is fundamental, and the opposition between the two usually rests upon a further maintenance of essential difference between human beings and animals (Horigan 1988).

The two categories have always been seen as exclusive and opposed in the West although the attributes and terms of the opposition have changed, and the particular image of nature associated with a vegetarian diet is a specific one which conflicts with the scientific world view. The rise of Western science in the sixteenth and seventeenth centuries created an image of nature which was passive, female, wild and disorderly, and to be controlled by men (Easlea 1983). These were very negative connotations at that time, and there was no sense of nature or the natural as being in any sense good or desirable. This view of nature was reinforced by the contemporary anthropocentric theology described above, and humanity's right to exploit the natural world was endorsed by both science and religion. In the seventeenth and increasingly in the eighteenth centuries human beings' right of dominion over the natural world was questioned and there was a growing anxiety about meat-eating which was coupled with a changing image of nature and animals. The natural world began to be idealised as a sort of rustic idyll, and this was most clearly articulated in the Romantic movement at the end of the eighteenth century. The image of nature as beneficent, spiritually uplifting, peaceful and innocent was central to their arguments for vegetarianism. Contact with it was prized since it could redeem humanity from the corrupting influences of society. Nature was also endowed with its own moral force and power, and it was not merely the plaything of humankind. To eat meat was not only physiologically unnatural but was an indication of humanity's fallen nature; the 'natural' human diet was vegetarian which, it was argued, would remove the ferocity from human nature and restore order and harmony in the world.

This Romantic image of nature and the natural world, not "red in tooth and claw" but endowed with marvellous qualities, is implicit in the responses of the subjects in this study. Natural

products were equated with purity, wholeness and goodness and contrasted with the contaminating, unhealthy, and unnatural attributes of processed food and meat. A vegetarian diet is a 'natural' diet because it has come to us directly from nature in the category of food, it requires minimal, if any, processing, and can be eaten raw. Meat on the contrary has to be killed and cooked before it can be eaten, and furthermore the contemporary meat supply is 'tampered with' and filled with chemicals. These foods are thus rejected since they have lost their pristine qualities of 'purity' and 'naturalness'. Vegetable foods, on the other hand, can transfer their symbolic qualities of 'naturalness', 'wholeness' and 'purity' to the consumer via metonymical association and contagious magic (Kandel and Pelto 1980).

These attitudes towards nature and the belief that 'natural' qualities can be transmitted to the consumer are very apparent, and are now catered to by the food and other industries. A recent Body Shop catalogue proclaims to its customers that "The Body Shop believes that ingredients from natural sources can be used in skin and hair care preparations and still retain their natural qualities, if the products are treated with care and integrity", and "Returning to nature, even if it is only through the products we buy, is increasingly attractive. The human race's interaction with the natural world has resulted in a catalogue of disasters, or potential disasters... Our interference with nature has created an imbalance which could prove to be life-threatening" (The Body Shop 1991).

This can be seen as a form of 'primitivism', which has a long tradition in Western history going back to Greek ideas about the Golden Age - a time when humankind lived happy and virtuous in a state of 'nature'. Nowadays, the chronological dimension and the idea that human beings were happiest at the beginning of history before the start of civilisation is replaced by glorifying the way of life of other less civilised or 'savage' peoples, but civilisation or society is still seen as perverting or distorting humanity's 'natural' state. As Horigan (1988, p53) points out, the image of people living in state of 'nature' often comprises several elements of which one of the most common is "the 'dietetic state of nature': vegetarianism".

Twigg (1979) also identifies 'nature' and the natural as one of the central themes in modern vegetarianism, and one that serves to resolve certain contradictions and ambiguities which, according to Twigg, exist in modern vegetarian ideology. She considers that for vegetarians the eating of animal flesh represents the ingestion of animal nature which will feed the bestial part of human nature, and "will break down the constructed barrier between men and the beasts" (Twigg 1979, p20). Another central theme in modern vegetarianism, however, identified by Twigg is the stress on wholeness, a concept which refers simultaneously to 'wholefoods', psychic wholeness, and the unity of all living creatures. This emphasis on the unity of creation makes meat-eating "cannibalistic and horrible" (Twigg 1979, p21).

Vegetarians thus have, according to Twigg, an ambivalent attitude towards nature; "they both fear it and desire to be one with it" (Twigg 1979, p21). This ambiguity and contradiction is resolved by the image of nature constructed by vegetarianism and its conception of fundamental human nature; human nature is perceived as essentially good, and human beings are not fallen creatures but are corrupted by the society in which they live.

Vegetarianism thus expresses a particular image of nature which has implications for the definition of human nature (a noble or an ignoble savage?), but also for the perception of animals and the definition of animality vis-á-vis humanity. Twigg does not pursue this, but it is argued here that vegetarianism also contains an implicit challenge to the myth of human supremacy. In Chapter 5 it was seen that some subjects still appeared to hold a hierarchical conception of different animal species with humans occupying the apex. Other individuals, however, rejected this for a more egalitarian notion of a continuity of being in which there is no line of essential difference between human beings and animals. This was most apparent among group V, many of whom were also involved in animal rights groups. Henshaw (1989, p27) has also noted the connection between veganism and the animal rights movements; "It is virtually inconceivable that a person should become involved in the animal rights movement and not be vegetarian. That is the bottom line. It is much more likely that they will be a vegan, or even a fruitarian". Animal rights activists directly equate animals with oppressed human groups, such as ethnic minorities and women, and accuse society of 'speciesism'. They hold that there is no difference between human beings and animals, at least in moral terms, and that animals should be granted civil rights. This dissolving of the line of difference between humankind and beasts negates the ambiguous feelings toward nature that Twigg identified, and also indicates a lack of homogeneity among vegetarians regarding their attitudes towards animals. This is discussed below in section 7.5.

Attitudes towards animals should, as the concept of nature, be seen in a cross-cultural and historical context. With regard to English attitudes, the historian Keith Thomas has identified a radical shift in feelings towards animals over the period 1500-1800: "The relationship of man to other species was redefined; and his right to exploit those species for his own advantage was sharply challenged. It was these centuries which generated both an intense interest in the natural world and those doubts and anxieties about man's relationship to it we have inherited in magnified form" (Thomas 1984, p15). This almost complete reversal of attitudes towards the natural world was the product of several changes such as the decline of the anthropocentricism world view, the rise of natural science in the seventeenth and eighteenth centuries, and industrialisation and urbanisation in the nineteenth century. These changes have led to an increasing marginalisation of animals from the lives of the majority of people in the UK except in the form of pets (a relatively recent phenomenon in the West, see Serpell

1986), and also a questioning of what constitutes the difference between humans and animals, if any.

This question has provoked both learned debates (see for instance, Ingold 1988) and public discussion. The recent threatened closure of London Zoo sparked a heated interchange about the ethics of zoo-keeping. There was even an editorial in The Independent questioning the keeping of animals in captivity for the purpose of human entertainment which is described as "contrary to nature", and "Their [zoos] worst effect is to perpetuate the old view of man as lord and master of creation" (The Independent, Monday 8th April, 1991). Earlier in 1987 there was a long series of correspondence in the same newspaper over whether fish felt pain and the implications of this for angling. Even the supermarket chain Tesco's now distributes free leaflets assuring its customers that they do not test their products on animals. To the mediaeval mind this would be incomprehensible - animals and the rest of the natural world were designed for human use by God, and human mastery over them was thus divine will.

To reiterate somewhat, if the choice of a vegetarian diet is seen in the light of Gofton's remarks about role of food as a "communicative resource, a language, which both expresses the main themes and values of the society and enables individuals to pursue their individual projects and purposes", vegetarianism instead of being "a re-affirmation of a world view and a subtle modification of its shape as the individual interprets and restates it" (Gofton 1986, p131) is rather a rejection of prevailing cultural values and world view. The vegetarian world view, although historically a minority view, represents a quite radical and potentially subversive challenge to the dominant Western view that the nature is ours to exploit. As stated before, vegetarianism is not an isolated phenomenon but is linked with other movements of social dissent such as the ecology or green movement, the anti-fur trade lobby and the animal liberation movement which all question the dominant attitude that nature and all it contains were designed for human use and exploitation. Very much as in the seventeenth and eighteenth centuries there is conflict regarding both sides of the equation; do animals have moral rights? and, what are human rights and responsibilities in relation to them and the rest of the natural world? The arguments on both sides rely on particular and contrasting views of animality, nature, humanity and society. For vegetarians the line of separation between humankind and animals has weakened, if not dissolved, and it is no longer ethical to eat animals as they are considered to be of the same order of being as humans and inhabiting the same moral universe with the same rights. This represents a quite fundamental shift in values, and Thomas considers that these new attitudes pose a dilemma of "how to reconcile the physical requirements of civilisation with the new feelings and values which that same civilisation had generated" (Thomas 1984, p301). Perhaps for some people the answer is to become vegetarian, or at the very least an 'ethical consumer'.

7.4 Purity and the status of the body

It has also been seen that in addition to a desire to eat natural foods, another theme expressed by subjects in their responses to questions and through their usage of food as a "communicative resource" was a concern about the status of the physical body and a desire for purity. This was documented by subjects' attitudes on a series of issues ranging from dietary fibre to different methods of food production. It must be remembered, as Douglas (1982) points out, that food, in addition to serving various social and symbolic functions, is also part of "the provision for care of the body" (Douglas 1982, p86). Douglas interprets the symbolism of the human body primarily as a symbol of a bounded social group, and the meaning of anxiety about the status of the body and its orifices as "a care to protect the political and cultural unity of the minority group" (Douglas 1966, p124). It is suggested here, that like food symbolism, the concern about the status of the body expresses a more personal meaning - anxiety about the status of the individual person - but that this also has wider meanings. Again, this anxiety rests upon fundamental and primitivist concepts of the character of the human person and human society.

The stress on physical purity contains an implicit critique of modern mass society and passive consumerism, which are seen as degrading, corrupting and threatening to the 'natural' state of humanity. This, as described in Chapter 4, is envisaged as intrinsically pure, whole (in terms of mind and body, and unity with 'nature') and perfectible. This 'natural' state, however, is threatened by the malignant influences of modern society, and there is a feeling that in the modern world we have lost touch with 'nature' and its redemptive properties. In a study of health foods, Atkinson (1980) interprets their value as stemming from their symbolic status as 'natural' foods, which represent a resolution between nature and culture and the perceived fracture between these two spheres in our over-cultured world. There is also a sense that modern society fractures human nature and separates us from our 'natural' whole state of being (Coward 1989).

Coward, in her discussion of the alternative health movement, also argues that the state of the body is being used as an arena for the individualised expression of wider concerns, and that the desire for physical purity can been seen as "a criticism of mass society, a criticism of the passive consumers of industrialised society, where a 'healthy' attitude towards food becomes a way of supposedly reasserting individuality" (Coward 1989, p133). It was seen that in many of the subjects' responses that in addition to a concern about the status of the body, there was a desire for self-control and increased autonomy expressed as a desire for increased control over one's body and what one puts into it. This is linked with contemporary obsession with health and exercise which are, as Crawford (1984) shows, largely talked about in terms of self-control and will power. In the context of consumer society there is great emphasis laid upon

the physical attributes of the body, such as health, beauty, fitness, weight, and the appearance of youth (Featherstone 1991), and to be healthy, fit and thin is an external demonstration of inner cleanliness, moral virtue and self-restraint. Thus not only does contemporary society separate humanity from nature, but it is seen as 'sickening' and threatening to the autonomy of the individual. The phenomenon of the 'ethical consumer' concerned about her/his health is, according to Coward, a reassertion of individuality and a reaction against what is seen as passive consumerism and the manipulation and undermining of individual autonomy. Within the philosophy of the alternative health movement, however, the solution to this problem is located at the level of the individual, and even in some cases in the colon. To quote from Cleansing the Colon; "There is no doubt that, used as part of a whole nutritional and natural health approach, the Colon Cleansing Programme can transform your life... the end result is a healing of emotions and mind as well as body" (Wright 1985, p3). This "victim-blaming" approach is criticised by Coward (1989) and also by Crawford (1977; 1984) as the stress on personal responsibility diverts attention from and mystifies the social production of disease and undermines rights to health care.

Twigg has also identified the "concern with the status of the body and the meaning of purity" as a central theme of modern vegetarianism (Twigg 1979, p14), but considers it to be the central theme. She interprets vegetarianism as a purity movement which "offers a this-worldly form of salvation in terms of the body" (Twigg 1979, p24). It is suggested in this thesis that although the desire for purity remains a strong theme in vegetarianism, it is no longer the pivotal issue for all vegetarians, and that today there may in fact be 'vegetarianisms'. This postulate is discussed next.

7.5 Vegetarianism or vegetarianisms?

Twigg (1979; 1983) in her interpretation of modern vegetarianism considers that it displays unity in 2 senses; firstly historically in sharing certain key concepts with the vegetarian movement as it emerged in Britain in the eighteenth century, and secondly in the unity of its ideology. The latter is held by Twigg to be given coherence and consistency by certain underlying themes which rest upon the central concern with the status of the body. The ethical and health arguments for vegetarian diets she views as two parts of a greater unity, and, according to Twigg, "it is in fact rare to find a vegetarian who would only support only one aspect" (Twigg 1979, p16). Twigg's study of the vegetarian movement in England from 1847-1981, however, pre-dates the 1980s which have seen an enormous increase in the number of people who follow vegetarian diets, many of whom are not members of organisations such as The Vegetarian Society. It is proposed here that vegetarianism has now lost the ideological unity which Twigg described and that it has fragmented into a collection of overlapping 'vegetarianisms'.

In this study, which was carried out in 1987-1988, many of the subjects were 'new' vegetarians, that is people who had not been vegetarian for very long, and differences were observed between individuals and between the groups D, LO and V in the sample. In Chapter 3, for example, it was seen that there was clear although non-significant association between reasons for being vegetarian and the type of vegetarian diet followed; as the diet excluded more animal foods, so the more likely it became that an individual's reasons were to be of an ethical nature. It also emerged that ecology is a fairly new category of motivation cited principally by younger people, whereas health was of greater interest to the older vegetarians in the sample. Throughout, group V tended to show less concern about matters of health than either group D or LO, but in contrast they had modified other aspects of their lifestyle to a much great extent than the other 2 groups. This suggests a lack of homogeneity among the vegetarians in the sample. The question remains, however, of whether the differences observed are ones of degree, that is are they all essentially subscribing to the same ideology but with varying degrees of commitment with groups D and V occupying the 2 poles, or, are the differences more profound and substantive. There are various dimensions of difference that would suggest the latter is the case, and that there are now 'vegetarianisms'.

One critical difference is the attitude towards nature and animals. As already mentioned in section 7.3, Twigg in her study of vegetarian ideology identifies an ambivalent attitude towards nature - that vegetarians "both fear it and desire to be one with it" (Twigg 1979, p21). This ambiguity stems from the perception of a line of essential difference between human-beings and animals and a fear of bestiality, but some subjects in this study, notably the vegans, rejected this notion of human supremacy for a more egalitarian and also more political view of animals. This links to another striking difference between the different types of vegetarian - the degree of politicisation. For many of the Vs, their diet and the treatment of animals were not only a matter of ethics and health, but also of politics - animals were seen as an exploited underclass, an animal proletariat almost. Again as already noted in section 7.3, many of the vegans in the sample were involved in animal rights groups and considered it directly linked with their chosen diet. The demi-vegetarians, however, many of whom still ate animal flesh of some kind, were less concerned with issues of animal rights and, although still placing great value on the 'natural' and its attributes, still appeared to retain a more hierarchical conception of the relationship between humankind and animals. Twigg (1979) comments that vegetarianism has always been an egalitarian ideology and has had strong links in the past with socialism; it was associated with the cooperative movement, the early Fabians, Labour churches, Tolstoyan anarchists and the ILP. The vegetarianism she describes belongs to the "ethical and utopian wing of socialism that rejects class war in favour of brotherhood, and sees revolution as being achieved primarily in men's and women's hearts... There are - significantly - few Marxist vegetarians" (Twigg 1979, p27). This contrasts sharply with the vegan view of

animals as an exploited underclass and the violent anarchy of the Animal Liberation Front described by Henshaw (1989).

Other characteristics, such as age, tended to coalesce around each group, particularly the vegans, and there was less difference between groups D and LO than between these 2 groups combined and group V. As described in Chapter 2, the sample as a whole was predominantly young to young-middle aged, from the professional and managerial classes and most had not been vegetarian for more than 5 years. The vegans, however, were conspicuously younger, had been vegetarian for a shorter period of time, were less exclusively middle class, were more likely to be single, live alone and cook for themselves than the other 2 groups, but were observed to have stronger social networks with other Vs and more belonged to organisations directly linked with their diet, such as The Vegan Society, than the other two groups. In a study of young American vegetarians in the US, Dwyer et al (1974a) also observed a significant association between the extent of dietary avoidances and membership of groups advocating vegetarian diets. Dividing their sample into "joiners", who were members of such groups, and "loners", they found that the "joiners" were more likely to practice far-reaching food avoidances and also reported other lifestyle changes and an alteration in their pattern of social relationships on becoming vegetarian. Similarly for the vegans in this study, involvement with other vegans appeared to be very important.

It is therefore suggested that the vegetarians in this sample were not informed by single vegetarian ideology, but that there are subtle differences in motivation and attitudes towards health, nature and animals. At the risk of caricature, the Vs can be described as essentially more subversive and political, more motivated by moral/ethical reasons, and less concerned with their personal welfare than the Ds. The members of Group D, although also composed mainly of 'new vegetarians', were more preoccupied with the state of their health and bodies, and were less concerned about the political ramifications of vegetarianism and animal rights. Group LO contained some new recruits, but was composed mostly of individuals who had followed a vegetarian diet for more than 10 years and some for over 60 years. They would appear to conform to Twigg's description of vegetarianism, and can be seen as part of what the novelist Angela Carter terms "old vegetarianism, which was part of a lifestyle embracing socialism, pacifism and shorts, a simple asceticism expressing a healthy contempt for the pleasures of the flesh" (Carter 1976, p592).

This identification of different 'vegetarianisms' is corroborated by the study of Keil and Beardsworth (1991) who identified 2 distinct "menus" that their vegetarian subjects were eating from - a "rational" and a "moral" menu. The term "rational" menu they use to describe a diet based on explicit notions of cause and effect and which is followed to achieve a particular

desired outcome, such as weight loss or enhanced health. They argue that such a menu could be interpreted as informed by current health thinking and that those who eat from a "rational menu" could be seen as "exemplars of the modern consumer" (Keil and Beardsworth 1991, p12). The "moral menu" is founded on ethical notions against which the acceptability of foods are measured, and any health benefits derived from the diet are incidental. Vegetarianism thus exhibits its own "menu pluralism", although Keil and Beardsworth's use of the term "rationality" is perhaps unfortunate since it implies a conformity with medical or scientific rationality. A better term might be "health menu", since it was seen in this study that ideas and attitudes about health were more in accordance with the alternative health movement than Western biomedicine.

Despite this, Keil and Beardsworth's concept of "menus" is very useful and from the data presented in this study it is possible to identify 3 vegetarian "menus": 1) an health or purity menu that expresses primarily a concern for health and purity of the body but which draws on the alternative health movement rather than Western biomedicine; 2) a traditional vegetarian menu which conforms to the vegetarian ideology described by Twigg; and 3), a radical moral menu which questions the rights and responsibilities of humankind regarding animals and the natural world and the line of difference between them. Keil and Beardsworth did not examine the actual diets consumed by their subjects, but in this study a convergence between diet and attitudes was found. Group V who expressed the most heterodox attitudes and beliefs also deviated most from an omnivorous pattern of food use and dietary intake, and again there was a greater difference between group V and groups LO and D combined than between the latter 2. The different vegetarian "menus" are thus also marked by different patterns of food use and nutrient intake.

The categorisation of individuals, however, into the various types of vegetarian marked by different "menus" should not necessarily be seen as exclusive or immutable. As seen in Chapter 3, some individuals moved through vegetarianism progressively adopting a more stringent diet and also altering their reasons for following such a diet. It appeared that as individuals tended towards veganism the concern for health and personal well-being became increasingly submerged in the ethical and political arguments for vegetarianism. Group V was the most clearly defined in terms of motivation, actual food use and nutrient intake, and underlying "menu", whereas group D was not characterised by any predominant category of motive and it is possible that some of those who were D when the study was carried out have now become lacto-ovo vegetarians or vegans.

Not only has vegetarianism lost its internal coherence, but is also less sharply differentiated from the attitudes prevalent in the rest of society and, as indicated previously, there is

considerable degree of overlap with other social movements such as ecology, animal rights, the alternative health and New Age movements. The number of people becoming vegetarian is growing rapidly - a recent study from Bradford University reportedly estimates that there are at present 30,000 new recruits a week (The Times, 16th May 1991), although it is not known how many vegetarians revert to meat-eating. Perhaps in the future meat-eating will become culturally abnormal and socially stigmatised, as vegetarianism was until recently. Mennell (1985, p316) considers that the growing aversion for flesh-eating in the West is the product of an "advancing frontier of repugnance", which is itself part of an increasing sense of refinement and delicacy created by the "civilising process". If this is so, then vegetarianism is truly a higher diet and vegetarians are the vanguard of civilisation.

7.6 Implications of this study for the further study of vegetarianism and food choice

It has been found in this study that vegetarianism is based on a complex ideology which rests upon certain key concepts such as nature and the natural and purity. Modern British vegetarianism can be traced back to the seventeenth century, but, while contemporary vegetarianism shares many links with its historical antecedents, it no longer displays ideological unity and under the general rubric of 'vegetarianism' several overlapping 'vegetarianisms' can be identified which are marked by different patterns of food usage. Further investigation into the social aspects of vegetarianism could explore the concepts of "menus" further and, in relation to these, address areas such as the manner in which different types of vegetarian are recruited, how the sense of commitment is generated, whether vegetarians 'lapse', and the contribution of being a vegetarian is to a person's social identity.

With regard to dietary intake, the diets of all groups were found to be nutritionally commendable and in line with current healthy eating recommendations: moderate total energy intakes, high PUFA and low SFA intakes, and high fibre and carbohydrate intakes. The place of meat and other animal foods in the diet was progressively taken by nuts, legumes and particularly cereals. This ensured adequate intakes of most micronutrients, but intakes of zinc for all, riboflavin, calcium and vitamin D for non-milk drinkers, and iodine and B12 for vegans could be problematical. The finding of a low iodine intake among vegans was a new observation. It should be remembered that this conclusion regarding dietary adequacy is based on the analysis of dietary intakes alone and that no physiological or biochemical information was gathered. Studies of the nutritional status of vegetarians which have examined biochemical and physiological indices have produced conflicting results, but, as discussed earlier, vegetarians do not appear to suffer from the predicted deficiencies. Potential areas of further research into the nutritional aspects of vegetarian diets therefore are the adequacy of such diets with regard to the nutrients just mentioned and in particular iodine, the effects of a high fibre intake on mineral absorption and the possibility of adaptation.

The wider aim of this thesis as defined in the introduction was to demonstrate the "great symbolic force of food" and that food cannot be viewed simply as mere "bodily input" (Douglas 1982, p123). It has been shown that vegetarians are not a group of ignorant or misinformed individuals who have somehow suppressed their innate "meat-hunger", but are a group of people who using food to make a series of statements about the abstract values to which they subscribe. While physiological factors such as hunger and flavour are important, it cannot be argued that such mechanisms are the primary distinguishing features of vegetarian food choice. Future research into human dietary selection thus needs to incorporate the social and symbolic factors involved in food choice and to acknowledge the non-nutritional needs which food and eating may serve. The concept of 'menus' originated by Keil and Beardsworth (1991) could be developed further and generalised to the broader study of the diversity of human eating habits.

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APPENDIX 1

SURVEY OF VEGETARIANS: SOCIAL INTERVIEW

SUBJECTS NAME .....

NUMBER .....

DATE .....

GROUP .....

HOME DISTRICT .....

FOOD AND HEALTH

1. What does it mean to you to be in good health

2. Do you consider that diet is important?
   1. yes
   2. no
   3. DK

3. Are you careful about what you eat?
   1. yes
   2. no
   3. DK

4. Would you describe yourself as a generally healthy person?
   1. yes
   2. no
   3. DK

5a. Since becoming vegetarian, do you feel that your health has improved?
   1. yes
   2. no, not really
   3. DK

5b. If yes, in what way?

5c. Do you relate this to your change in diet?
   1. yes
   2. partly
   3. no, not not at all

6a. Do you feel that a vegetarian diet affects your thinking?
   1. yes
   2. no
   3. DK

6b. If yes, in what way?

7a. Does your body feel cleaner now that you are a vegetarian?
   1. yes
   2. no
   3. DK

7b. If yes, in what way?

8. What is fibre?

9. What does it do?

10. Do you eat salt apart from in cooking?

1. yes
2. sometimes
3. never

11a. Do you eat sugar apart from in cooking?

1. yes
2. sometimes
3. never

11b. If no, have you given it up?

1. yes
2. no ie never ate it

12a Do you worry about your weight?

1. yes
2. no

12b. If yes, do you ever diet?

1. yes
2. no

12c. If yes, roughly how often?

1. permanently
2. once a month
3. once a year
4. not regularly, when need to
5. other

12d. What constitutes a diet for you?

13. What is a vitamin?

14. Do you feel that you get all the vitamins you need from food alone?

1. yes
2. no
3. DK

15a. Do you use any vitamin supplements?

1. yes, regularly
2. yes, sometimes
3. no, never

15b. If yes, what kind?

1. _____
2. _____
3. _____
4. _____
5. _____

16a. Is there any difference between the vitamins which occur naturally in food and those in tablets?

1. yes
2. no
3. DK

16b. If yes, what?

17a. Do you ever use any dietary supplements?

1. yes, regularly
2. yes, sometimes
3. no, never

If yes:

b. What kind?

c. What does it do for\to you?

1. _____
2. _____
3. _____
4. _____
5. _____

18a Do you ever use any homeopathic, natural, herbal, or other alternative medicines?

1. yes, regularly
2. yes, sometimes
3. no, never

If yes:

b. What kind?

c. What do you take it for?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

19. Why do you prefer it\them to conventional medicines?

20. What qualities do you think food should have (ie the food YOU want to eat and like)?

21. Are there any foods which you like to eat some of every day?

22. In your opinion what is a good snack?

23. What is the difference between a snack a main meal?

24. Can you give me examples of the following kinds of food and give me one reason why you chose that particular one?

	type	reason
a. junk food		
b. natural food		
c. nourishing food		
d. naughty food		
e. processed food		
f. pure food		
e. wild food		

25. How long have you been a vegetarian?

26. Why did you first become one? If you have more than one reason can you rank them?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

27a. Was it a sudden decision?

1. yes
2. no

27b. If no, please describe?

28. Can you describe how you changed your diet? ie did you stop eating meat overnight or was it a gradual change?

29a. Have your reasons changed in any way?

1. yes
2. no

29b. If yes, how?

30a. Have you always eaten the same kind of vegetarian diet that you eat now?

1. yes
2. no

30b. If no, how has it varied?

31. For you, what are the main benefits or virtues of a vegetarian diet?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

32a. Did anyone influence you in your decision to become vegetarian?

1. yes
2. no

32b. If yes, who?

33a. Are any members of your family vegetarian?

1. yes
2. no

33b. If yes, who?

34a. Are you involved in any group, society, organization or sport which influences or affects what you eat in any way?

1. yes
2. no

34b. If yes, what is it called?

34c. How is your diet affected?

35a. Do you eat any animal foods?

1.	none	
2.	red meat	
3.	white meat	
4.	poultry	
5.	organic or real meat only	
6.	fish	
7.	shellfish	
8.	eggs-any kind	
9.	free range only	
10.	cheese	
11.	yoghurt	
12.	butter	
13.	milk	
14.	other	

35b. If you drink milk, what kind?

35c. If you eat fish but not meat, why don't you eat meat?

36. Even if you don't eat any meat at all now, do you still like it?

1. yes
2. no, not any more
3. never did

37a. Is there any thing about meat which is bad for you?

1. yes
2. no
3. DK

37b. If yes, what?

38a. Is there any difference betweeen red meat and white meat?

1. yes
2. no
3. DK

38b. If yes, what?

39. Why is it different ie acceptable to eat plants? They are alive after all?

40. If you have been invited out for a meal and you are served meat, what do you do?

41. For you does being a vegetarian extend to:

a. Not wearing leather shoes?

1. yes
2. no

b. Not using cosmetics? (ie those tested on animals or containing their products)

1. yes
2. no

42. Do you do anything to spread your views on vegetarianism?

1. yes
2. no

43. What does it mean if something has been organically grown?

44a. Are organic foods better?

1. yes
2. no
3. DK

44b. If yes, in what way?

45. What do you think about the effects of chemical fertilizers and pesticides on the environment?

46. Do you have any views on intensive factory farming?

47. Can you rank the following according to which, in your opinion, feels pain the most

a. calf

b. sheep

c. snail

d. chicken

e. cod

f. pig

g. prawn

48a. Are the lives of fish any different to those of animals?

1. yes
2. no

48b. If yes, in what way?

FOOD PROCESSING AND ADDITIVES

49. What do you think processing does to food?

50a. Are there any kinds of food which you try to avoid buying or eating such as canned food or foods containing additives?

1. yes
2. no

50b. If yes, what kind?

50c. Why do try to avoid them?

51. Why are additives put in food?

52. Are they necessary?

1. yes
2. no
3. DK

53a. Can they affect us, the consumer, in any way?

1. yes
2. no
3. DK

53b. If yes in what way?

54a. Do they change the nutritional qualities of food in anyway?

1. yes
2. no
3. DK

54b. If yes, in what way?

55a. Do you think there is any difference between natural and artifical additives?

1. yes
2. no
3. DK

55b. If yes, what?

PERSONAL DETAILS

56. What was your age last birthday?

57. Male/Female

58a. Are you still in full time education?

1. yes
2. no

58b. If yes, are you at:

1. school
2. college
3. university
4. other

58c. If no, how old were you when you left school?

58d. Do you have any qualifications?

1. O-levels or CSE
2. A-levels or HNC
3. degree or HND
4. other

59a. Are you religious?

1. yes
2. no

59b. If yes, are you:

1. Christian (which denomination?)
2. Jew
3. Moslem
4. Buddhist
5. Hindu
6. Mormon
7. Jehovah's Witness
8. other

59c. Were you born or converted to this faith?

1. born
2. converted

60. What is your marital status?

1. single
2. married
3. co-habiting
4. other

61a. Do you have any dependents?

1. yes
2. no

61b. If yes, who?

62. What are your living arrangements?

1. live alone
2. live with partner
3. live with parents or other family
4. live in shared accommodation
5. lodge
6. other

63. What are your cooking arrangements?

1. cook for yourself
2. cook for yourself and others eg partner or children
3. are cooked for
4. share cooking
5. other

64a. Do you have a job?

1. yes
2. no

64b. If yes, what is your occupation?

64c. If no, what was your former occupation?

1.
2. never had a job

64d. If married or co-habiting, does your partner have a job?

1. yes
2. no

64e. If yes, what is it?

64f. If you live at home, what do your parents do?

APPENDIX 2

SURVEY OF VEGETARIANS :

FOOD WEIGHING BOOK

SUBJECT NAME.....

NUMBER.....

DATE.....

GROUP.....

ROUND ONE/TWO

INSTRUCTIONS FOR FOOD WEIGHING BOOK :

Please weigh everything you eat and drink on:

.....

We would like you to write down as many details as possible. For example:

- whether beans are canned or dried
- if vegetables have been boiled, baked or fried etc
- if flour is brown or white

If the food or drink is already prepared in a packet or tin, it is not necessary to weigh it. Instead record in the book the size or weight of the container. For example:

- baked beans, Whole-Earth, 1 8oz tin

For each item, please remember to specify the name, brand, size or weight, and number if you eat more than one.

If you eat a dish like a salad, nut-roast, or casserole weigh the portion you eat and then write down as many recipe details as you can. For example:

- quiche, 225 grams: wholemeal pastry case filled with eggs, spinach cheddar cheese and milk.

Please don't forget to include :

- snacks like chocolate or fruit
- dietary supplements
- drinks alcoholic and non-alcoholic
- meals eaten away from home

EVERY TIME YOU EAT ANYTHING:

1. Write down the time of day in the first column.
2. In the second column, describe the food; it's name, brand, and method of cooking.
3. Press the zero button on the scales. This will make the digital display show zero. Now place the item of food on the scales and record it's weight. Write this down in the third column.
4. If you need to use a plate, put this on the scales and then press the zero button. When you add yourfood to the plate, the display show the weight of the food on it's own. Record this weight
5. Repeat this until you have served out your whole meal. Make sure you press the zero button before you put something on the plate.
6. For each item of food, please write on a separate line, putting down what the food is, how it was cooked and how much it weighed.
7. At the end of the meal, if you have not eaten everything and there is something left on your plate like potato skins, weigh the plate and leftovers together. Record this weight and then the weight of the plate on it's own. Write both down in the third column and describe the leftovers.
8. On the next page is an example of how to do this.

Day of Week: Date:

Time	Food, drink and leftovers	weight grams
7.30	Muesli (Sainsburys)	53
	Yoghurt (home-made from semi-skimmed milk)	25
	banana, fresh, chopped	60
	coffee	180
	milk, semi-skimmed	35
12.30	Sandwich: two slices mixed grain bread (Marks and Spencer)	65
	brie cheese	50
	1 tomato	15
	1 blackberry yoghurt (Losely)	150
5.00	1 4-finger Kit-Kat	45
7.00	Bean stew: red kidney beans (dried), tomato	215
	puree, herbs, onion, carrots, green pepper	
	mushrooms)	
	Brown rice, boiled	150
	Salad (tomatoes, baby lettuce, cucumber, oil	160
	and vinegar dressing)	
	2 glasses red wine (Sainsbury's Chianti)	250
	1 apple	80
	leftover core + skin	15

Notes and comments	FOR OFFICE USE: Food	Brand	Weight

Day of Week: Date:

Time	Food, drink and leftovers	weight grams	Notes and comments	FOR OFFICE USE Food	Brand	Weight

APPENDIX 3

SURVEY OF VEGETARIANS :

FOOD AND DRINK DIARY

SUBJECT NAME.....

NUMBER.....

DATE.....

GROUP.....

ROUND ONE/TWO

INSTRUCTIONS FOR FOOD AND DRINK DIARY:

We would like you to record everything that you eat and drink on:

.....

This should include all food and drink eaten away from home.

Instructions:

1. For each day use as many pages as you like, but start a new page each morning

2. At the top of each page, put the date and the day of the week.

EVERY TIME YOU EAT OR DRINK SOMETHING:

3. Write down the time.

4. Write down the name of the food or drink, it's name, brand and method of cooking. We have given an example of how to do this.

5. Write down the amount of each food or drink you have. It may help to do this in household measures.

6. If there are any leftovers on your plate, such as potato skins, please describe them as well.

7. Please don't forget to include:
   - snacks eg chocolate, crisps or fruit
   - drinks eg coffee or barleycup, saying whether you added milk and/or sugar
   - alcoholic drinks eg beer or wine
   - non-alcoholic drinks eg coca-cola
   - meals eaten away from home
   - any dietary supplements you may use

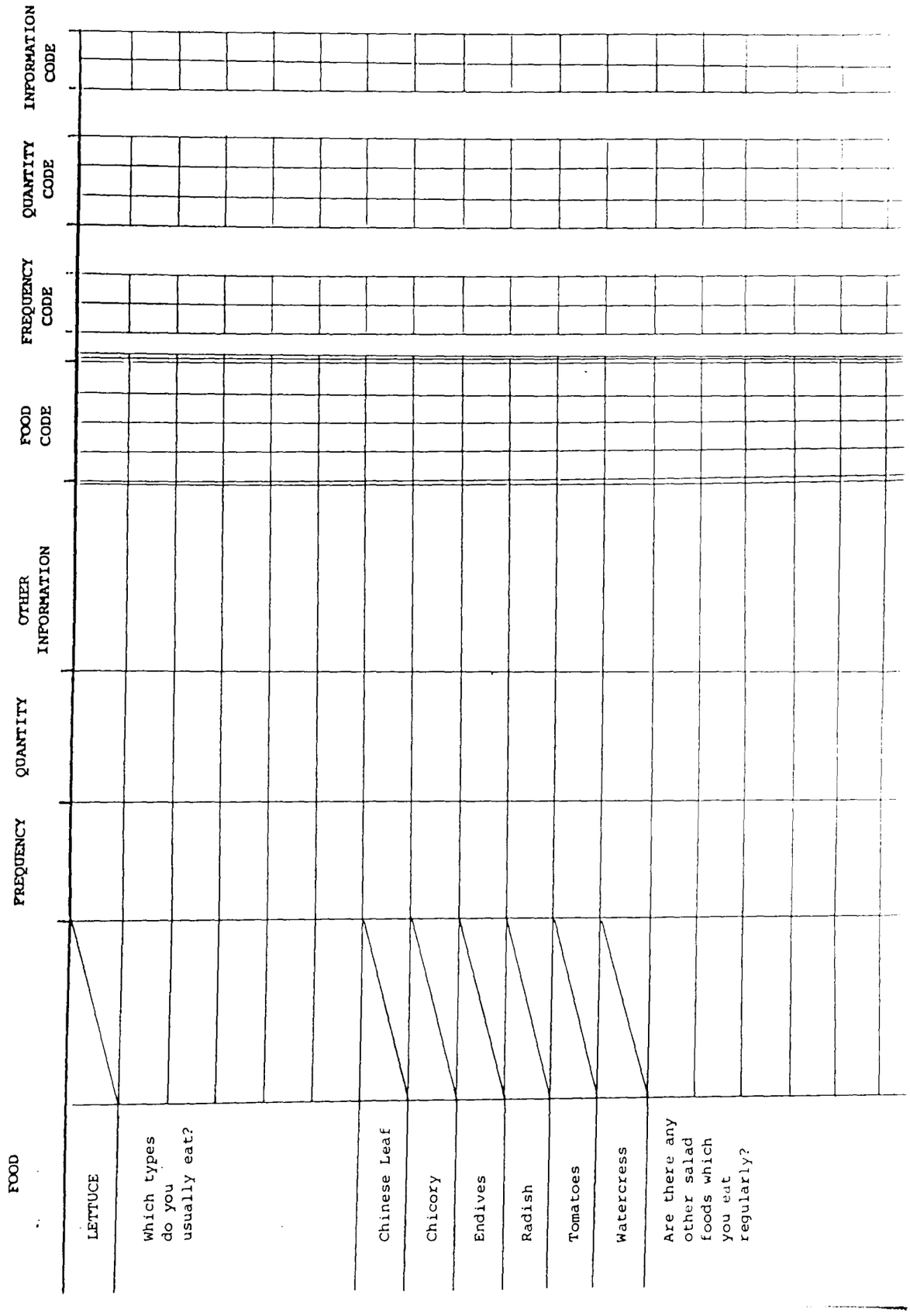
Day of Week: **Date:**

Time	**Food, drink and leftovers**	**Amount or weight**
8.00	Wholemeal bread, homemade	2 thick slices
	Soya margarine (Sainsburys)	thick spread
	Blackberry jam (Robertson's)	2 teaspoons
	Orange juice, cartoned, unsweetened (Tesco)	1 glass
	Coffee	1 mug
	Milk, semi-skimmed	quarter mug
1.30	Wimpey Chillie Burger	1
	Apple, skin + core not eaten	1
4.00	Tea + milk	2 cups
	Chocolate cake	1 slice medium
8.00	Fresh pasta, wholemeal	4 tblspn
	Pesto sauce	1 heaped tblspn
	Beer (Long Life)	1 large can
	Fruit yoghurt, Diet Ski	1 small pot

ay of Week: Date:

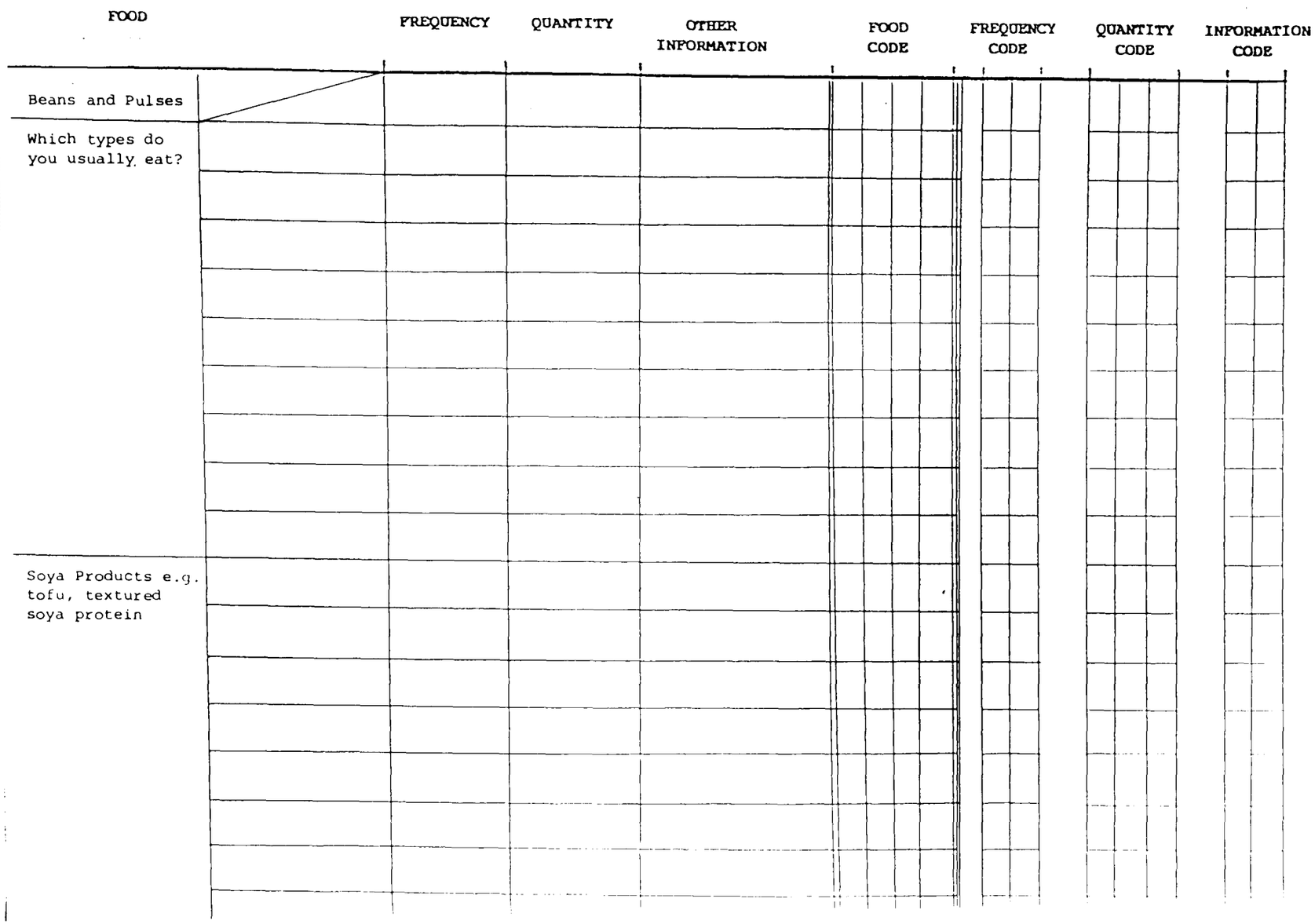
ime	Food, drink and leftovers	Amount or weight	Notes and comments	FOR OFFICE USE Food	Brand	Weight

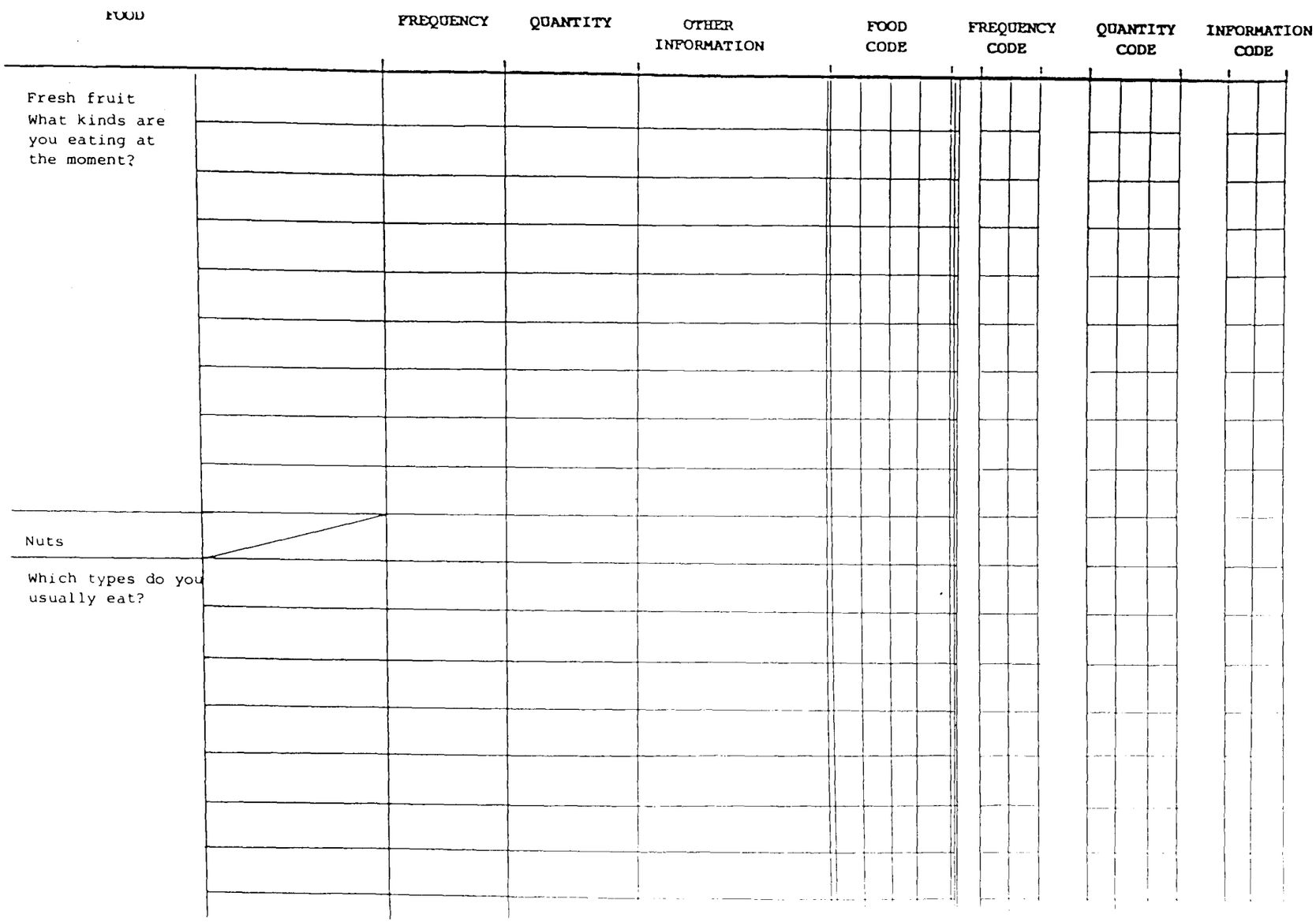
APPENDIX 4: Copy of Food Frequency Interview Schedule



FOOD		FREQUENCY	QUANTITY	OTHER INFORMATION	FOOD CODE	FREQUENCY CODE	QUANTITY CODE	INFORMATION CODE
Celery	Raw							
	Cooked							
	Canned							
Brussel sprouts	Raw							
	Cooked							
Carrots	Raw							
	Cooked							
	Canned							
Cabbage	Red, raw							
	Red, cooked							
	White, raw							
	White, cooked							
	Others, raw							
	Others, cooked							
Spinach	Raw							
	Cooked							
	Frozen							

FOOD		FREQUENCY	QUANTITY	OTHER INFORMATION	FOOD CODE	FREQUENCY CODE	QUANTITY CODE	INFORMATION CODE
Broccoli and Calabrese	Raw							
	Cooked							
Potatoes	Boiled/steamed							
	Roast							
	Baked							
	Chips, home-made							
	Chips, purchased							
	Instant							
	Canned							
Do you regularly eat any other starchy vegetables								


FOOD
FREQUENCY
QUANTITY
OTHER INFORMATION
FOOD CODE
FREQUENCY CODE
QUANTITY CODE
INFORMATION CODE
Beans and Pulses
Which types do you usually eat?
Soya Products e.g. tofu, textured soya protein


FOOD
FREQUENCY
QUANTITY
OTHER INFORMATION
FOOD CODE
FREQUENCY CODE
QUANTITY CODE
INFORMATION CODE
Fresh fruit
What kinds are you eating at the moment?
Nuts
Which types do you usually eat?

FOOD		FREQUENCY	QUANTITY	OTHER INFORMATION	FOOD CODE	FREQUENCY CODE	QUANTITY CODE	INFORMATION CODE
Peanut Butter Brand?	Smooth							
	Crunchy							
Do you use any other bought nut products e.g. nutburgers? Brand?								
Bread	Wholemeal							
	White							
	Other							
Flour	Wholemeal							
	White							
Wheatgerm								

FOOD		FREQUENCY	QUANTITY	OTHER INFORMATION	FOOD CODE	FREQUENCY CODE	QUANTITY CODE	INFORMATION CODE
Rice	Brown							
	White							
Do you eat any other whole cereal grain, e.g. oats, millet, buckwheat?								
Milk	Whole, full fat							
	Semi skimmed							
	Skimmed							
	Dried & skimmed e.g. Marvel							
	Dried & veg fat added, Five Pints							
	Soya milk							
Goats' milk								

FOOD		FREQUENCY	QUANTITY	OTHER INFORMATION	FOOD CODE	FREQUENCY CODE	QUANTITY CODE	INFORMATION CODE
Yoghurt	Creamy, whole milk							
	Low fat							
	Goats' milk, incl Greek							
	Sheep's milk incl Greek							
	Homemade Milk type?							
Hard cheese								
Which type do you usually eat?								
Soft full fat, e.g. cream cheese								
Soft low fat, e.g. Jockey, fromage frais								
Cottage cheese								
Are there any other soft cheeses which you eat, e.g. Brie, Camenbert?								

FOOD		FREQUENCY	QUANTITY	OTHER INFORMATION	FOOD CODE	FREQUENCY CODE	QUANTITY CODE	INFORMATION CODE
Processed cheese								
Goats' milk cheese								
Sheep's milk cheese								
Eggs	free range							
	other							
Dietary supplements. If possible, please specify the name, brand and dosage								
Herbal teas								

APPENDIX 5 : Supplementary Food Frequency Interview Schedule

SUBJECT NAME.....
NUMBER.....
DATE.....

12. Do you add salt to your food during cooking?

1. regularly
2. sometimes
3. never/not usually

13. At table, do you:

1. generally add salt to your food without tasting?
2. taste the food, but generally add salt?
3. taste the food, but only rarely add salt?
4. rarely or never add salt at the table?

14. What type of salt do you use at the moment?

1. table/cooking salt
2. sea salt
3. iodized salt
4. salt alternative eg "Lo-salt"

15. In the last 5 years have you used:

1. table/cooking salt?
2. sea salt?
3. iodized salt?
4. salt alternative eg "Lo-salt"?

16a. Do you ever eat seaweed?

1. yes
2. no

16b. If yes, roughly how often?

16c. What kind?

16d. How do you cook it?

APPENDIX 6: Tables of data presented in Figures 3, 4 and 5

'Why did you first become a vegetarian?'

First response:

D = demi-vegetarian, LO = lacto-ovo-vegetarian, V = vegan

	D	LO	V	TOTAL
		No (%) in group		
moral/ethical	10 (27.0)	26 (48.1)	29 (63.0)	65 (47.4)
ecology/political	5 (13.5)	3 (5.6)	1 (2.2)	9 (6.6)
preference	8 (21.6)	8 (14.8)	3 (6.5)	19 (13.9)
health	8 (21.6)	12 (22.2)	8 (17.4)	28 (20.4)
convenience	3 (8.1)	3 (5.6)	1 (2.2)	7 (5.1)
other	3 (8.1)	2 (3.7)	4 (8.7)	9 (6.6)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Second response:

	D	L	V	TOTAL
		No (%) in group		
Only one reason given	12 (32.4)	18 (33.3)	13 (28.3)	43 (31.4)
moral/ethical	8 (21.6)	21 (38.9)	20 (43.5)	49 (35.8)
ecology/political	4 (10.8)	2 (3.70)	2 (4.3)	8 (5.8)
preference		3 (5.6)		3 (2.2)
health	3 (8.1)	6 (11.1)	7 (15.2)	16 (11.7)
convenience	4 (10.8)	2 (3.7)	3 (6.5)	9 (6.6)
other	6 (16.2)	2 (3.7)	1 (2.2)	9 (6.6)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Third response:

	D	L	V	TOTAL
		No (%) in group		
No third reason	23 (62.2)	37 (68.5)	31 (67.4)	91 (66.4)
moral/ethical	1 (2.7)	6 (11.1)	6 (13.0)	13 (9.5)
ecology/political	3 (8.1)		3 (6.5)	6 (4.4)
preference	3 (8.1)	4 (7.4)		7 (5.1)
health	3 (8.1)	2 (3.7)	4 (8.7)	9 (6.6)
convenience	2 (5.4)	2 (3.7)		4 (2.9)
other	2 (5.4)	3 (5.6)	2 (4.3)	7 (5.1)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

APPENDIX 7: Use of dietary supplements

'Do you ever use any dietary supplement?'

	D	LO	V	TOTAL
	No (%) in group			
regularly (now)	8 (21.6)	12 (22.2)	10 (21.7)	30 (21.9)
sometimes (now)	8 (21.6)	13 (24.1)	9 (19.6)	30 (21.9)
formerly	3 (8.1)	4 (7.4)	6 (13.0)	13 (9.5)
never	18 (48.6)	25 (46.3)	21 (45.7)	64 (46.7)
TOTAL	37 (27.0)	54 (39.4)	46 (33.6)	137 (100.0)

Type of supplements used

First response:

	WHOLE GROUP	
	No	%
N/A	64	46.7
garlic	5	3.6
ginseng	9	6.6
royal jelly	3	2.2
kelp tabs	4	2.9
evening primrose oil	3	2.2
wheatgrass tabs	1	.7
lecithin	1	.7
glucose tabs	1	.7
Vecon	1	.7
powdered protein	3	2.2
yeast tabs	4	2.9
yeast extract	1	.7
zinc	5	3.6
dolomite	1	.7
minerals, general	11	8.0
iron	13	9.5
selenium	2	1.5
other	5	3.6
TOTAL	137	100.0

Second response:

	WHOLE GROUP	
	No	%
N/A	106	77.4
ginseng	1	.7
royal jelly	3	2.2
kelp tabs	2	1.5
evening primrose oil	2	1.5
mistletoe	1	.7
wheatgerm	1	.7
lecithin	1	.7
seaweed	1	.7
yeast tabs	2	1.5
yeast extract	1	.7
zinc	2	1.5
dolomite	1	.7
minerals, general	3	2.2
trace elements	2	1.5
iron	3	2.2
selenium	1	.7
iodine	2	1.5
cod liver oil	1	0.7
lactobacillus acidophilus	1	0.7
TOTAL	137	100.0

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What do 'vegetarians' eat? By ALIZON DRAPER and ERICA F. WHEELER, *Centre for Human Nutrition, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT* and JANET LEWIS, *Ministry of Agriculture, Fisheries and Food, 65 Romney Street, London SW1P 3RD*

A group of 137 subjects who had changed their diet to become 'vegetarian' (i.e. not vegetarian for ethnic or religious reasons) was recruited in Greater London, of whom 127 completed a 3 d weighed dietary intake measurement. They comprised thirty-seven who usually avoided fish or meat or both (demi-vegetarians), fifty-two who usually ate no animal foods other than milk and eggs (lacto-ovo vegetarians) and thirty-eight who ate no animal foods at all (vegans). Recruitment was done through local radio, specialist shops and magazines, and personal introductions. Nutrient intakes were computed using the Ministry of Agriculture, Fisheries and Food database, derived from food tables (Paul & Southgate, 1978), with the addition of new recipes and specialist foods where necessary. The Table shows intakes of energy-yielding constituents and dietary fibre. Analysis of variance showed some significant effects of sex and vegetarian group, but no interactions.

	Intake/d											
	Demi-vegetarian				Lacto-ovo vegetarian				Vegan			
Sex . . .	Male		Female		Male		Female		Male		Female	
No. in group . . .	13		24		16		36		18		20	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Energy (MJ)	9·86	3·91	7·98	2·59	9·40	2·47	7·67	2·45	9·20	3·09	7·35	2·66
Protein*† (g)	82	39	59	20	66	21	56	17	65	27	47	18
Fat* (g)	100	51	85	34	93	35	77	36	85	43	67	42
Fatty acids (g)												
Saturated*†	37·3	23·5	15·9	15·9	32·6	16·2	25·1	13·9	18·0	11·5	15·7	7·9
Polyunsaturated†	20·2	12·4	22·5	12·4	21·4	9·6	20·2	12·6	30·5	15·6	23·9	16·2
Carbohydrate (g)	268	122	221	71	280	86	221	66	289	99	243	85
Dietary fibre*†‡	35	20	30	10	34	13	33	12	44	16	36	17
Alcohol*†	17·4	24·4	8·8	14·4	12·2	25·2	12·3	25·2	11·6	18·6	3·3	8·9

*Significant effect of sex (ANOVA): $P<0·05$.
†Significant effect of vegetarian groups (ANOVA): $P<0·05$.
‡Southgate (1978).

The main food groups contributing to energy intake were cereals (32–40%), milk products (11–12%, not vegans), and fruits and nuts (11–19%). Fats and oils contributed less (15%) to fat intake than did cereals (19–25%) and milk products (15–18%, not vegans). Cereals were also the major contributor to protein (29–42%) and fibre (41–44%) intakes.

Paul, A. A. & Southgate, D. A. T. (1978). *McCance and Widdowson's The Composition of Foods*. London: H.M. Stationery Office.
Southgate, D. A. T. (1978). *American Journal of Clinical Nutrition*, 315, 107–110.

Who are 'vegetarians' and what do they think about food? By ALIZON DRAPER, NINA MALHOTRA and ERICA F. WHEELER, *Centre for Human Nutrition, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT*

Anecdotal evidence suggests that avoidance of some or all animal foods is increasing. A group of 137 'vegetarians' was recruited in Greater London, of whom thirty-seven were demi-vegetarians (D), fifty-two lacto-ovo vegetarians (L), and thirty-eight vegans (V) (Draper *et al.* 1990). A pretested question schedule was administered, covering their attitudes, opinions and practices in relation to food, health and related aspects of lifestyle.

Women outnumbered men (D 65%, L 69%, V 53%). There was a predominance of the professional and managerial social classes, Registrar General's groups 1–2 (58%, whole group) and of graduates (51%). Vegans were a conspicuously younger group, having adhered to their diet for correspondingly shorter periods of time. Vegans were more likely to be unpartnered (D 45%, L 65%, V 72%), to live alone (D 11%, L 31%, V 30%), and to belong to an organization directly connected with their diet (D 0%, L 28%, V 55%). They were more likely to modify other aspects of lifestyle (D 68%, L 81%, V 96%) and to cook their own food (D 30%, L 44%, V 63%). Vegans were less likely to compromise by eating animal foods in any social context (D 62%, L 14%, V 5%). Most of them (89%) had adhered to some kind of vegetarian diet before becoming a vegan. Reasons for adopting the diet included moral/ethical considerations (D 27%, L 22%, V 17%) and personal preference (D 22%, L 15%, V 6%). Most of the group (93%) viewed meat as harmful. Reasons included presence of antibiotics, etc. (D 32%, L 30%, V 33%), high fat content (D 35%, L 32%, V 26%) and revulsion to eating a 'dead' substance (5%). White meats were considered less harmful than red (63%). Most of group D considered fish to be an acceptable food, and all rated fish as 'lower' animals.

The whole sample had very strong feelings about health: 99% felt that diet was important in maintaining good health; 94% took care about what they ate; 67% felt that their health had improved since becoming vegetarian, which was associated with group (V 87%, L 61%, D 51%). Health itself was conceptualized in holistic terms, encompassing mental and spiritual qualities as well as the purely physical. Fibre and vitamins were poorly defined in terms of orthodox medical knowledge, but moral and symbolic qualities were found to be projected onto these items. This may partly explain the high use of dietary supplements in the sample.

Attitudes regarding food revealed a preference for it to be as unprocessed and as natural as possible. The word natural was a constantly recurring word in responses to all topics and carried symbolic connotations of goodness, purity and wholeness. Inevitably, the food industry and food additives were viewed with great cynicism: 96% felt that most additives were unnecessary. Organic produce was considered superior by 93%.

Vegetarianism expresses more than a pragmatic decision about dietary choice; it articulates a coherent and rational set of attitudes and beliefs which extend from food and health to abstract and philosophical issues such as ethics and man's relationship to the natural world.

Draper, A., Wheeler, E. F. & Lewis, J. (1990). *Proceedings of the Nutrition Society* **49**, 60A.